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The Illinois Medical Journal

Official Journal of the Illinois State Medical Society

EDITOR — Harold M. Camp. EDITORIAL BOARD — James H. Hutton, Chairman, Frederick H. Falls, Josiah J. Moore, Edwin M. Miller, Chauncey C. Maher, Harry S. Gradle, Harry Culver, Walter Stevenson, Raymond W. McNealy.

Editorials

THE FUNCTIONS OF THE COUNTY MEDICAL SOCIETY

It was our privilege recently to review many of the volumes of the Transactions of the Illinois State Medical Society, these published transactions going back to 1850 and published annually until 1899, when the Illinois Medical Journal became the official publication of the Society. There were actually two exceptions to the above statement for during the Civil War period there were no annual meetings and consequently no transactions for 1861 and 1862.

It was interesting to note in these early meetings that even the small component societies had occasional meetings, well attended and at which times current problems confronting the profession were given critical consideration. In 1852 at the annual meeting, Nathan Smith Davis recommended that a public policy committee be formed to tell the press and the public at large what the medical profession was doing to help minimize the hazards of illness. This, to our knowledge, is the first reference in this state at least to medical public relations.

There seems to be no doubt at this time that we are not only rapidly becoming over-specialized, but we are seeing far too many medical societies organized. With the many new "Associations", "Academies", "Colleges", and hundreds of special societies of all types being organized everywhere, the county medical society has momentarily in many instances been pushed into the background, and in many places meetings of these many new societies are limiting the regular meetings of the local parent organization.

In many communities which formerly had frequent meetings of their county societies, we now see an annual, or perhaps quarterly meeting, which too often is poorly attended. It is quite obvious that there is no time like the present to rejuvenate our county societies, and see that they once more become the local organization to speak with authority on health and medical problems, and that every group and individual in the respective communities again realize that when problems concerning health and medical care are under consideration, the proper group to consult is invariably the county medical society.

There has never been a time in the history of this great country when physicians should be more alert and competent to discuss before lay groups the many problems arising constantly relative to health and medical care than we see at this moment. Every county society should see to it that the membership as a whole is thoroughly conversant with these many problems, and that some members at least are ready to present their view-points before the many local organizations desiring information on these present day problems.

It should be understood that membership in the county medical society automatically gives membership in the state society, and likewise in the American Medical Association. At this time

there are approximately 140,000 members of county and state societies and of the A. M. A. This should be a most powerful group when it comes to speaking authoritatively on the many phases of health and medical care.

The County Medical Society, as the basic unit of our organization, should be considered in every community as the proper group to give information on medical care and health problems. Members of county societies should be better prepared than ever before to discuss current health, medical care or medical economic problems. With nearly 140,000 members of the American Medical Association, it has been stated that probably no more than 2,500 of this large group actually participate in presentations of this type.

Every county medical society should be thoroughly aware of problems existing in their own communities and likewise be prepared to discuss them freely before many lay groups in an effort to stimulate public interest in these problems and endeavor to solve them properly for the best interests of the citizenry as a whole. This, of course, applies primarily to problems concerning health and medical care including proposed projects to improve health conditions in the area. Matters concerning sanitation, the handling and distribution of milk and other food supplies, the desirability of recommending a county or multi-county health unit and many other problems prevailing in many areas.

All members of county medical societies should be thoroughly aware of the efforts to develop and promote voluntary prepayment medical and surgical care insurance and let everyone in their respective communities know that such insurance for their protection against the so called, "catastrophic illness" or accident can be procured at this time

The Woman's Auxiliary can likewise be of

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Business Office....30 North Michigan Ave., Chicago 2
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GENERAL COUNSEL

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State Society wil pay no bills for legal services except those contracted by the Committee. Notify the Chairman at once. Do not employ attorneys.

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much service in every community, and its members should belong to the many clubs and organizations and be able to participate in the many deliberations, especially when subjects pertaining to health, medical care, and allied subjects are being discussed. Our attention was called recently to a clipping from a daily paper reporting on a meeting of the County Home Bureau, at which meeting the local Home Advisor discussed drugs used in modern medical care, and their indications. She did say, however, that these drugs should not be used unless they were prescribed by the family physician. It would have been much better and unquestionably more informative if this subject had been discussed by a member of the medical profession who could have told an interesting story of the developments in medical care in recent years.

Even small county medical societies can have relatively frequent meetings. They can have speakers from their own immediate area, or if preferred, can procure speakers through the services of the Illinois State Medical Society Committee on Scientific Service, 30 North Michigan Avenue, Chicago. This is a type of service which has been available for county medical societies in Illinois over a long period of years. The American Medical Association has a film library from which county societies may procure scientific films on many subjects. These may be procured from the A. M. A. Committee on Medical Motion Pictures, in the headquarters Building, at 535 North Dearborn Street, Chicago.

The Illinois State Medical Society is now arranging a Conference of County and Branch Society officers to be held at the Pere Marquette Hotel, Peoria, on Sunday, March 14. At this conference much information will be given to these officers as to the services for medical societies, which are available both from our own State Medical Society and from the American Medical Association. This is the first mid-year conference of its type to be arranged by this society, and if it proves popular, as it no doubt will, there seems to be no reason why a mid-year conference of society officers should not be arranged each year. It is hoped that all county medical societies in Illinois will arrange to have representatives at this important Conference, and a report of the Conference will be published in the April Illinois Medical Journal.

STATE-WIDE MATERNAL DEATH STUDY

A study of all maternal deaths in down-state Illinois has been undertaken jointly by the State Medical Society through its Maternal Welfare Committee, and the State Department of Public Health. The study will include the following features; 1) local hospitals will report promptly to the State Department of Public Health on the occurrence of a maternal death; 2) visits will be made by personnel of the Department's Division of Maternal and Child Health to attending physicians for the purpose of obtaining pertinent data on individual cases; 3) cases will be analyzed on an anonymous basis by the State Maternal Welfare Committee; 4) the Committee's findings will be transmitted to the attending physicians; and 5) compiled reports (also anonymous) will be presented to medical groups, hospital staffs, and in professional journals.

The need for such a state-wide study has been recognized for some time. The State Maternal Welfare Committee has recommended annually since 1937 that studies and analyses be made of deaths associated with pregnancy. Maternal deaths in Chicago have been studied since 1938 under the joint auspices of the sub-committee on Maternal Mortality of the Joint Maternal Welfare Committee of Cook County, and the Chicago Health Department. Similar studies have been carried on in 34 other States.

The medical profession can learn a great deal from the study of each maternal death: what factors were involved in causing the death? — was the patient at fault because she did not seek care or follow her doctor's instructions? — were medical and hospital care adequate for the particular case? — could the death have been avoided, and if so, how? Such a study can help the physician or the hospital to prevent a future occurrence under similar circumstances. In a similar manner, dissemination of factual, anonymous information through professional channels can transmit the benefit of these experiences to other physicians.

Through this study the physicians of this State have the opportunity to patricipate in an important method of reducing maternal mortality. The study will benefit both the physicians and their patients. It is hoped that it will also stimulate local medical societies and hospital staffs to include thorough discussions and analyses of maternal deaths in their activities.

ADOPTION IN ILLINOIS

A Warning to Physicians

Physicians or hospital administrators occasionally undertake to give a child, unwanted for some reason by its natural parents, to persons they consider worthy to adopt the child.

Such an action by a physician, viewed in the most favorable light, may serve humane and entirely commendable purposes. It may, for instance, protect an unmarried mother from public disgrace — often a girl the physician has cared for from birth. It brings the joy of children into a childless home. It assures the child of care in a loving family rather than a public institution. The physician therefore may consider himself justified in assuming the responsibility.

However, there is an important catch in it:

Such action by a physician is a misdemeanor under the Child Welfare Act of Illinois which is punishable by a fine of $25 *to* $500 *or imprisonment up to one year, or both. The penalty may apply to an individual, such as a doctor, or to the officers of a corporation, such as a hospital.*

The act provides that only an agency licensed by the Department of Public Welfare may receive or place a child in any hands but those of its natural parents or blood relatives. Hospitals and their officers and employees are specifically barred by law from acting as child placement agencies and may not release a child to persons other than the parents, a licensed agency or a court, without approval of the Division of Child Welfare.

Under Illinois law, adoption can be authorized only by the Circuit or County Courts and all known data about the child, its parents, guardians and relatives, the persons proposing to adopt the child, and the agency having its custody, must by law be made a matter of court record. The child must also spend a six-month probationary period in the home of the adopting family before the petition for adoption is filed.

After the petition is filed, the court must designate a suitable agency to make a full social investigation of the case in order to determine that the petitioner is a worthy person to adopt the child. If all is found satisfactory, a public hearing is held and the adoption approved. The records of any case — such as one involving illegitimacy — may be impounded for secrecy.

Adoption is a complex process, and there are many social, psychological, financial, religious, legal, racial, family and other factors which determine its success or failure. However, experience has taught that proper isolation and evaluation of these factors can help assure success in adoptions. The study should be made before an irrevocable step is taken. Such study requires cooperation on the part of the medical profession, the hospital, the parents, natural and adoptive; the social workers and the official agencies, such as the Divison of Child Welfare and the courts. The physician should contribute his share of cooperation.

Full investigation, for instance, would eliminate such unfortunate episodes as a recent case in which a child proved to have an entirely different racial heritage than was originally claimed for it. And, while most cases of adoption handled quietly by physicians are undoubtedly as successful in outcome as they are humane in motive, there are nevertheless a certain number that go wrong and seriously so.

Recently in Chicago, for instance, a woman physician was found to have placed four children in the home of a fellow physician whose wife was beyond question not the proper person to care for them or her home. Most illegal adoption cases are not prosecuted by the Division of Child Welfare, but this was so flagrant that a conviction was obtained and the doctor was suspended from the Chicago Medical Society. Meanwhile three of the four children have not yet been identified.

The only legal and proper course, then, for a physician faced with one of these problems is to turn the whole question over to a properly licensed agency, experienced in the various phases of the problem. In areas where such agencies do not exist, a regional child welfare supervisor in one of the seven regional offices of the Department of Public Welfare in Rockford, Chicago, Peoria, Springfield, Urbana, East St. Louis, or Carbondale, may be called on for advice and assistance. Or information, including copies of the laws involved, may be obtained from Edna Zimmerman, Superintendent of Child Welfare, Department of Public Welfare, Springfield.

By so informing himself and obtaining a valuable ally, the doctor not only saves himself time and trouble and avoids the possibility of a clash with the law, but he also assures the prospective parents of full knowledge and guarantees the

child's future as far as possible, while at the same time giving the natural parents proper protection.

SEND IN YOUR QUESTIONS

In this issue of the Illinois Medical Journal, we are publishing questions which have been submitted by members of the Society relative to unusual medico-legal problems together with the answers which have been carefully prepared by our own Legal Counsel. There are many problems arising in the practice of Medicine which are more than perplexing to the individual who faces them.

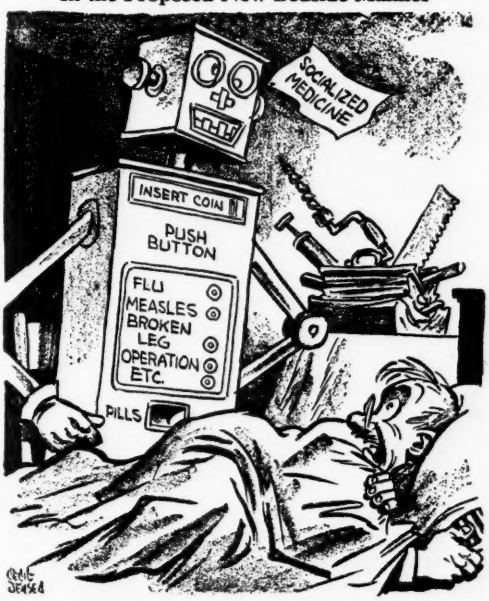
If information is desired concerning care to clients of the Illinois Public Aid Commission, we have been assured that the I. P. A. C. Director will give the proper replies. Then frequently, problems arise in connection with Workmen's Compensation, and controversies occasionally develop in connection with payment for services in these cases, especially since Illinois is one of those states which does not have an approved fee schedule for care of compensable cases.

At this time, a number of interesting questions have been received and will be answered in the new department in the Journal. Those which are presented in this issue are relative to the work of the Coroner. The preparation of the answers has required a considerable amount of time and energy on the part of the General Counsel.

Any member of the Illinois State Medical Society may submit his questions to the Editor at either the office in Monmouth or the Chicago office at 30 North Michigan Avenue, and they will receive prompt attention. When the reply is desired by mail prior to publication, this will be done. The name of the member submitting questions will not be mentioned in the Journal. We hope that this new departmental addition to the Illinois Medical Journal will become popular and that it may be carried on as a regular feature in the future.

Preventive medicine requires not only the cooperation, consent, and understanding of the individual who is to be benefited; oftentimes he must take the initiative — he must realize that it is just as important to seek advice from his physician on how to keep well as it is to call upon the physician for help when illness strikes. Med. in the Changing Order, Rep. N. Y. Acad. Med. Comm., Commonwealth Fund, 1947.

In the Proposed New Bedside Manner



Courtesy, The Chicago Daily News

THE MEDICAL BENEVOLENCE FUND

During recent weeks, additions to the Medical Benevolence Fund of The Illinois State Medical Society have been received in the Secretary's Office. Several County Medical Societies have sent in checks from their funds and several members have likewise sent personal checks, all of which are greatly appreciated and have been officially acknowledged. Although the drive has been on for nearly a year to increase the Benevolence Fund, the returns have been received from less than 10% of the membership of this Society.

The Committee on Medical Benevolence has received applications for assistance from several in recent weeks, each of these applications have been thoroughly investigated and several additional beneficiaries have been added to our gradually growing list. It is the desire of this Committee, as recommended by the House of Delegates and the Council of the State Medical Society that all worthy candidates for assistance such as is afforded by the Medical Benevolence Plan who can qualify under the prescribed essentials for benefits, receive vouchers as long as the need exists.

Within a short time letters will again be sent

to the membership as a whole, relative to this worthy cause, and in the continued effort to build up the Medical Benevolence Fund until eventually the income from the fund will be sufficient to care for all needs of beneficiaries. Members desiring to contribute to this fund are again reminded that they may send in their checks to the Secretary, Illinois State Medical Society, Monmouth, Illinois, and their donations will be promptly acknowledged.

SCIENTIFIC MOVIES AN ADDED FEATURE FOR 1948 MEETING

For the first time at the Illinois State Medical Society Annual Meeting, May 10-12, Palmer House, scientific movies will be shown as part of the scientific exhibits. A special room with equipment and operator will be provided. A schedule of the time and subject of the movies will be in the program. Those interested in showing an original movie please make application immediately with Director of Exhibits, John A. Mart, M.D., 700 North Michigan Avenue, Delaware 3022.

MEDICAL AND SURGICAL SUPPLIES DESPERATELY NEEDED IN WAR-DEVASTATED AREAS.

Continued aid in the form of medical and surgical supplies from America is needed to prevent widespread suffering and death among the peoples of war-devastated areas throughout the world. The undersigned earnestly request all members of our profession to help us provide such aid through the Medical and Surgical Relief Committee, Inc.

During the past seven years, with little publicity and modest finanical support, this Committee has provided more than a million dollars worth of desperately-needed medical, surgical and dental supplies and publications to stricken areas overseas. These materials are sent to hospitals, physicians and dispensaries giving *free* medical care to the needy.

Our colleagues in Europe and the East are still faced with an appalling lack of basic medical equipment. Some have not even seen a medical journal or textbook printed since 1939, and are woefully uninformed of many of the latest medical advances.

We are able to do a great deal to alleviate this situation through the Medical and Surgical Relief Committee which receives, sorts, reconditions and ships material — ranging from physician's samples to used instruments — in response to authenticated appeals from overseas.

The items most consistently requested and most vitally needed are:

Adhesive tape, Ampoules — all types, Anesthetics (local, general), Antiseptics, Aspirin, Aspirin combinations, Autoclaves, Baby—bottles, cereals, clothes, food, nipples, Cod liver oil, Cotton — gauze — all forms, Dietary supplements, Germicides, Hospital ware, Hot water bottles and syringes, Hypo needles and syringes, Liver and iron capsules, Microscopes, Penicillin—(Crystal, Ointment, Tables), Quinine—(Tablets, Capsules), Rubber sheeting and tubing, Santonin and combinations, Scientific apparatus, Sedatives, Standard medications for various conditions, Sterilizers, Streptomycin, Sulfas — tablets and liquids, Surgeons gloves, Surgeons needles, Surgical instruments, Thermometers — (Fever — F. or C.), Vitamins — all types and strengths for children and adults.

— and the most pressing need of all is for recent medical, surgical and dental textbooks and journals.

Please forward any such supplies which you and your hospital can donate to this great need to:

The Medical and Surgical Relief Committee, Inc.
Room 328, 420 Lexington Avenue
New York 17, N. Y.

We urge you to lend your support to this vital work.

ATTEND Your ANNUAL MEETING, MAY 10, 11, 12

Medical Economics

The Medical Economics Committee — Chauncey C. Maher, Chmn., 6 North Michigan Avenue, Chicago, Edwin S. Hamilton, V. Thomas Austin, Emmet B. Bay, Jay McDonald Milligan, George Halperin, Marie Wessels, Thomas C. Browning, Roland R. Cross, Milton E. Bitter, Edwin F. Hirsch, Ford Hick, Carroll C. L. Birch, Hubert L. Allen.

PARTNERSHIPS IN MEDICAL PRACTICE

In our present era, the practice of medicine may be classified into two main types, individual and partnerships. Individual practice has been predominant for centuries and the partnership is a modern development.

The physician who has practiced alone has prized his individuality to a significant degree and usually defends his premise with real fervor. Likewise, patients have centered their medical needs in one physician's office and on occasions have been articulate in their praise of the "old fashioned family doctor." Much has been said about the patient-physician bond, which has been considered a corner stone of medical practice. The respect for this bond has placed an unusually heavy responsibility on the family doctor. The pathology under his jurisdiction included minor and major disease ranging from common colds, pneumonia, skin lesions, pregnancies, emotional problems, fractures, and serious surgical defects. An increased interest by certain physicians, who developed particular ability in some of these fields, has produced from the ranks of the family doctors, the specialist, first as an individual and later in partnership.

The partnerships which are best known are the large institutional groups, the Mayo's, the Crile's, the Lahey's, and others sponsored by University Medical Foundations. Smaller groups of the clinic type with most specialties represented have developed throughout the United States and particularly in the Middle West. On down the scale are simple partnerships, of two or three physicians, engaged in general practice or in a specialty. The merits and demerits of partnership practice have occasioned much discussion, principally concerned with the service rendered to the patient or the public. *More emphasis* might be placed upon the benefits of this type of practice to the doctor himself. The subject has many facets, bearing upon his economy, his health, his hours of work, and his general well being.

Partnership practice, in either large or small groups, allows a wider range of usage of the many adjuncts to the ordinary practice of medicine. Few individuals enjoy a practice large enough to permit the purchase and maintenance of X-ray equipment, laboratory facilities, adequate instruments, and a technical personnel to aid him in his routine medical work. These may not be necessary to him in the diagnosis and treatment of the common cold or other minor medical ailments, but neither do the fees of these types of pathology contribute greatly to his income. Many individual physicians in recent years have felt these disadvantages when their practice was in the same area with a well equipped clinic.

In partnership practice, the simple problem of vacations is readily soluble. The individual physician has often neglected to take his vacation, year after year, because he has been unable to shift readily his responsibility of patient load to a fellow practitioner and he cannot ignore the income loss from his absenteeism. In a partnership, these difficulties are more easily obviated.

The working hours of the average physician, specialist, or general practitioner have been excessive. The demands of the public upon the family doctor's time is a matter of common knowledge. Sick calls at night, telephone calls at his dinner

hour, emergency calls at any time during the day or night left him little or no leisure. The effect upon his health probably no one knows. The physician in partnership practice fares much better than his single brother. His hours are more orderly, his responsibility for emergencies more limited and even his telephone practice better arranged.

Partnerships in special fields also have certain advantages to the doctor. The obstetrician, the general surgeon, the fracture specialist, practicing alone even with young assistants play laborious roles. To be called from their beds, miss their office hours, rush through their meals, is more the rule than the exception. In the two or three men partnerships which are evolving in the specialities, much of this is changed. On first consideration, it would seem unusual for Mrs. Doe to engage an obstetrical partnership to deliver her and graciously accept whichever one was on duty the night or day of her delivery. Experience, however, has shown that this is accomplished, not only in the obstetrical field but in others.

The economy of the doctor has been a subject of serious consideration and also of jest. His savings, large or small, in former years and now impaired by income tax, were too frequently the objective of blue sky promoters. There have been some physicians who invested wisely in farm lands, business property, conservative stocks and bonds, or insurance annuities, but many have ended their careers with a house or cottage and eked out a penurious existence with a few uncritical patients. The physician in the partnership, on the other hand, faces the twilight of his career with an equity in a substantial practice, buildings and equipment with a trained younger element to carry on, and provide him with a reasonable income. During these emeritus years, he, on the other hand, may furnish mature advice to his younger colleagues that only experience can develop.

The young man entering practice today is confronted with these two modes of practice. Perhaps, he has seen his father, or his father's doctor practice alone, with few vacations, long hours, with or without commensurate financial return, but usually gaining a place of prestige in the community. Perhaps, he may have been told of that patient-doctor bond that was so important in that practice. He can also see the type of practice of the partnership, major and minor, and investigate if he chooses, the details of such a medical life. His choice will have much to do with his destiny.—C. C. M.

APPOINTMENT SHEET IS HELP FOR BUSY DOCTOR

Eliminating confusion and mistakes in recording appointments has long been a problem in the medical profession. Accurate records provide a permanent day-by-day account of appointments. It is essential that house calls, patients admitted and discharged, as well as miscellaneous information, be recorded clearly and accurately to assist in writing monthly statements and to provide a permanent running record.

To solve these problems, Professional Record Service has developed a new loose-leaf appointment sheet. It was designed, after intensive research in the medical profession, to determine the problems and exacting needs of doctors.

This new record sheet fits any standard three-ring binder. It divides the day into 15 minute intervals with ample space for patient's name and miscellaneous notations. Its convenient 8½" x 11" size provides additional space for an entire day's activities.

More than a year's supply may be purchased for as little as $4.08 including tax. Samples will be sent upon request. Address all inquiries or orders to Professional Record Service, P.O. Box 114, Bloomington, Illinois.

Medico-Legal Briefs

Answers to medico-legal problems of general interest submitted to the Editor will be answered in this department.

PROBLEMS IN CORONERS' CASES

I

QUESTION: The suggestion is made that death certificates of members of the Christian Science faith are not reliable from a statistical standpoint, and the question is asked whether such certificates could be marked appropriately so as to be disregarded in the compilation of vital statistics.

ANSWER: Our health laws make no special provision for reporting the deaths of members of any religious faith. The forms of certificates now prescribed make no inquiry as to the religion of a decedent, and it would probably be unwise for a coroner to include such information, unless the law were to be amended or the prescribed certificate form changed, to authorize it. The inclusion of such data might well be held an unwarranted invasion of personal rights, and a coroner could not reasonably be expected to assume responsibility in such a case without clear lawful authority. Granted that certificates of death as to such individuals are statistically unreliable, some health authorities believe that the number is not so great as to present a substantial problem.

II

QUESTION: What is considered the maximum length of time between the last attendance by a physician and the death of a patient, before the death becomes a coroner's case?

ANSWER: Since our courts have never passed upon this question, no positive answer can be given. Each case must be judged according to its own circumstances. When it appears that a decedent had never had any medical attention, or that his death was immediately preceded by several years of good health without having received medical care, the undertaker would clearly be obliged to notify the coroner, and the latter would have the right to make a preliminary investigation to determine whether any "violence, casualty or undue means" were involved. Beyond such clear cases, no hard and fast rule can be stated. Whether or not a person died "without medical attendance", within the usual and ordinary meaning of the term, would depend upon such factors as the nature of the final illness, whether acute or a chronic condition of long standing, upon age and general condition, as well as whether or how recently the deceased had seen a physician with regard to the disease or accident resulting in death. For the protection of both the undertaker and the coroner, doubts should probably be resolved in favor of a fairly strict construction of the term "without medical attendance". But coroners should bear in mind that unless a preliminary investigation discloses reasonable grounds to suspect that violence, casualty or undue means were involved, the coroner has no right whatever to conduct an inquest.

III

QUESTION: Is the information appearing on the covers of the coroner's death certificate book reliable?

ANSWER: Yes. The digest and summary of the laws relating to coroners and vital statistics, as printed on the covers of the coroner's death certificate book, is accurate and sufficiently

(*Continued on page* 133)

Correspondence

SIX LECTURES ON CANCER OF THE ORAL CAVITY

A new postgraduate course of six lectures designed to present recent advances in cancer of the oral cavity will be offered by the University of Illinois college of dentistry, in cooperation with the Illinois division of the American Cancer Society, starting Wednesday, March 31.

The course has been organized in response to growing recognition of the role of the dentist in cancer control and oral diagnosis.

Dr. Bernard G. Sarnat, acting head of the department of oral and maxillofacial surgery, will be in charge of the course. The course will be offered over a period of six consecutive Wednesdays from 7:30 to 9:30 p.m.

The course will place emphasis on the characteristics and differential diagnosis of oral lesions and will include consideration of cancer research, surgical treatment, and surgical and prosthetic reconstruction. The final period will be devoted to a round table discussion.

The course is expected to be of value to not only the dentist and physician who are in general practice, but also the oral and maxillofacial surgeon and the otolaryngologist. The tuition charge for the course has been waived, through the courtesy of the Illinois division of the American Cancer Society.

Further information and registration for the course may be obtained by writing Dr. Isaac Schour, associate dean in charge of the postgraduate school, 808 S. Wood Street, Chicago 12, or calling him at Monroe 3900, extension 375.

AMERICAN BOARD OF OPHTHALMOLOGY PRACTICAL EXAMINATIONS — 1948

Baltimore, May 20—25th
Chicago, October 6—9th

Written Qualifying Tests will be held annually, probably in January of each year. Applicants for the January 1949 Written Qualifying Test must be filed with the Secretary before July 1, 1948.

A supplement of diplomates from January 1947 — January 1948 will be sent gratis to all purchasers of the Board's Directory. This supplement is arranged alphabetically and geographically. No biographical material is included.

Important: Diplomates are urged to keep the Board office informed of all changes of address, so that the files can be kept up-to-date.

Officers For 1948. Drs. Goar, Chairman; Dunnington, Vice-Chairman; Beach, Secretary-Treasurer; Dunphy, Assistant Secretary.

COOPERATION IN CANCER REFRESHER COURSES COMMENDED

The Executive Committee, Illinois Division, American Cancer Society, Inc., at a meeting on January 21, 1948, unanimously passed the following resolution:

Be it resolved that the Board of Directors, Illinois Division, American Cancer Society, Inc., express their very deep appreciation of the cooperation and assistance in the conduct of cancer refresher courses for Illinois physicians to all

(*Continued on page* 133)

State Department of Public Health

EFFECT OF NITRATES IN RURAL WATER SUPPLIES ON INFANT HEALTH

JAMES G. WEART

Chemist, Division of Sanitary Engineering
Illinois Department of Public Health

Infant methemoglobinemia, with possibly marked cyanosis, may result from the use of feeding formulas incorporating water which contains the nitrate ion (NO_3) in toxic amounts. This syndrome, first reported by Dr. H. H. Comly,[1] of Iowa, in 1945, has since been frequently observed in central and southern Illinois.

That this disease is a problem of importance to infants in rural areas is indicated by our finding that Illinois well waters containing large amounts of nitrates occur with a frequency never before anticipated. Our results are in general agreement with those from Iowa,[2] where rural water supplies are obtained under geological conditions quite similar to those in Illinois.

Of a total of 5660 samples of water from private water supplies of all types and from all sections of the state, 20 per cent had a nitrate nitrogen content of more than 10 parts per million. This total includes a large number of samples of low nitrate content from the northeast quarter of Illinois, where rural water supplies are generally obtained from drilled wells in the glacial drift or from limestone formations.

In the rest of the state, where most rural water supplies are obtained from relatively shallow dug or driven wells (seldom more than 40 ft. deep) waters with toxic amounts of nitrate ion are much more common. In Sangamon County, (Springfield-county seat) more than 40 per cent of the waters from rural wells contain more than 10 parts per million of nitrate nitrogen, and more than 25 per cent contain more than 100 parts per million, an excessive amount. In Clinton County (Carlyle-county seat) where the samples examined were quite representative of the entire area, more than 75 percent of the waters from rural wells contained in excess of 10 parts per million. In this area, the waters with excessive amounts of nitrate (over 100 parts per million) made up 20 percent of the total samples.

If Comly's suggestion that 10 parts per million of nitrate nitrogen be considered the maximum that can safely be used for infant feeding, it is quite evident that the indiscriminate use of rural water supplies for infant feeding formulations may be unfortunate, and expose rural infants to an avoidable and unnecessary danger.

In view of this wide distribution of high nitrate rural water supplies in Illinois, it is recommended that no water proposed for the preparation of feeding formulas for infants should be prescribed or used unless the nitrate content of the water is known to be less than 10 parts per million, the maximum safe concentration on the basis of information available at the present time.

With but two exceptions, the public water supplies thruout the state are satisfactory from the standpoint of the nitrate content. In the case of the two small communities where the nitrate content of the public water supply exceeds this figure, the village officials and the local physicians have been already notified.

A simple colorimetric test for nitrates devised by Dr. R. H. Bray[3] can be used to determine quickly the approximate nitrate content of water.

Only one dry powder is used as a reagent, and the only equipment necessary is a test tube or spot plate. The prepared reagent and instructions for the test are available at moderate cost from Illinois Soil Testing Laboratory, 102 North Broadway, Urbana, Illinois or Urbana Laboratories, 406 North Lincoln, Urbana, Illinois.

The nitrate content of water will be determined by the laboratory of the Division of Sanitary Engineering, Department of Public Health, Springfield, Illinois, on samples of water submitted for that purpose. Such samples should preferably be submitted in the sterile sample bottles furnished for sanitary analyses by this Division, but any clean bottle will do. At least two ounces of water are necessary.

Emergency treatment of acute cases of cyanosis resulting from methemoglobinemia consists in the intravenous injection of 1 percent methylene blue solution, using approximately 1 ml. for each kilogram of body weight. Recovery is reported to be dramatic.

A positive diagnosis of methemoglobinemia involves the determination of both total and functioning hemoglobin. The difference between the two will be the amount of methemoglobin, which normally has a very low value.

That the water used was the causative factor has been established in a number of cases by the simple change of the water supply.

In agreement with the studies made in Iowa, we can find no correlation between the nitrate content of these waters and the sanitary quality, as demonstrated by a sanitary survey and the standard bacteriological test for coliform bacteria. We have no satisfactory explanation for the occurrence of these large amounts of nitrate.

There is neither a practical treatment that will remove the nitrates from the water, nor any method of well construction that will obtain better water. In those areas where high nitrate waters occur, they are, as a rule, the only waters available for rural use.

TYPICAL CASE HISTORIES

1—April 23, 1947, Dr. Walter M. Whitaker. The Quincy Clinic, Quincy, Illinois.—"I am forwarding you under separate cover a sample of water taken from a deep well in an adjoining county. I am particularly interested in the determination of the nitrate content of this water since it has been used to prepare the formula for an infant who at the age of three or four weeks, developed intermittent cyanosis for which no anatomic cause could be found and which was related, definitely, to a high methemoglobin blood value. The infant's cyanosis cleared up after two or three days of oxygen inhalations in the hospital, only to return after the baby had been home, and the well water again used in preparing its formula."

The nitrate nitrogen content of this water was 120 parts per million.

2—February 11, 1947, Dr. John D. Stull. The Olney Sanitarium Clinic, Olney, Illinois.—"This baby was admitted to the Hospital, February 9 complaining of cyanosis. She was born December 26, 1946 in the hospital. Breast feeding was attempted and the baby was on the breast almost exclusively until about two weeks of age. From that time until the time the baby was 4 weeks of age, she was partially breast fed, but increasing amounts of SMA formula was given so that by the 22nd of January she was almost exclusively on an SMA formula. On about January 22 or 23 the baby was taken on a trip to Kentucky. While enroute, the baby began to be cyanotic and by the time she was to her destination had developed very marked cyanosis. She was seen by a physician, who gave her one x-ray treatment to the thymus and admitted her to the hospital. In the hospital, the baby was kept in oxygen for about 2 days time and during that time the cyanosis improved tremendously. An x-ray of her chest at that time is said to have been normal. Following discharge from the hospital, the baby visited in Kentucky until February 6 on which day she returned to Olney. On February 8 in the evening the mother noticed a recurrence of the cyanosis. This became more marked during the following 24 hours until admission to the hospital here. At the time of admission, the physical examination was entirely negative with the exception of a moderately severe cyanosis. The baby did not appear seriously ill, though the breathing was somewhat shallow. There was no sign of any infection. The temperature was normal. Fluoroscopy of the chest revealed normal heart shadows. There was no sign of enlargement of mediastinum. The possibility of methemoglobinemia was considered and felt to be the most likely diagnosis. The baby was given oxygen in rather small amounts. In the absence of methylene blue for intravenous use, the baby was given 15 mgm. of methylene blue by mouth every 4 hours beginning at midnight. Eight hours later her color was tremendously improved. Red blood count showed 3,700,000 cells with a hemoglobin of 80%. She was discharged with instructions to use water from the Olney city water supply. Until the baby's admission here, she had been using water from a well. The water had been boiled. The parents did not take any water with them on their trip so that for the two weeks that the baby was in Kenucky she was on a separate water supply. I feel virtually certain, in view of the findings of nitrates to the extent of 110 parts per million of water in the sample we submitted to you, that this is a case of methemoglobinemia and secondary to nitrate ingestion. Unfortunately, we do not have a method for determining methemoglobinemia and, lacking the

intravenous methylene blue, we were unable to get the dramatic response which would have clinched the diagnosis."

The nitrate nitrogen content of this water was 115 parts per million.

3—January 8, 1948, Dr. Carl E. Pruett, Effingham, Illinois. Twins—one fatality. "It seems that such a causative factor in cyanosis has never before been recognized in this vicinity. However, it seems to be the only logical explanation in this case which proved fatal for one of the twins which was the one which had been home longest, and therefore had the more exposure and home formula."

The nitrate nitrogen content of this water was 122 parts per million.

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1. Comly, H. H.: Cyanosis in infants caused by nitrates in well water. Journal American Medical Association; **129**: 112-116, 1945.
2. Johnson, G., Kurz, A., Cerny, J., Anderson, A., and Matlack, G.: Nitrate levels in water from rural Iowa wells. Journal Iowa State Medical Society; **36**: 4-7, 1946.
3. Brya, R. H.: Nitrate tests for soils and plant tissues. Soil Science. **60**: 219-221, 1945.

MEDICO-LEGAL (Continued)

complete to serve as reliable guidance to coroners in almost every case. Any questions arising which are not clearly or fully covered should be referred to the Illinois Department of Public Health, which administers these laws.

CANCER COURSES (Continued)

officials and participants in the program at the Northwestern University Medical School, the University of Illinois Medical School, the Loyola University Medical School, Mercy Hospital, Michael Reese Hospital, and the University of Chicago Medical School. The fourth such course has been completed and a total of nearly 150 physicians have attended to date. This program emphasizes early diagnosis and treatment of cancer and must inevitably have a far reaching effect on cancer control activities in Illinois.

Edward Foss Wilson,
Chairman, Executive Committee

SWIFT AND CO. GRANT FOR AMINO ACID STUDY AT U. OF I.

The University of Illinois college of medicine has received a nutrition fellowship grant of $3,500 from Swift and Company, Chicago, for the study of amino acids in the blood under several conditions of disease.

The project will be conducted by the department of surgery, under the supervision of Dr. Tilden Everson. The grant covers studies for the current year.

U. OF I. GETS $7,920 GRANT TO STUDY "LIPASE A".

A research grant of $7,920 has been received by the University of Illinois college of medicine from the Upjohn Company of Kalamazoo, Mich.

The grant will be used to evaluate the use of pancreatic enzyme, "Lipase A," in the treatment of patients who have the symptoms of diarrhea due to pancreatic deficiency as to absorption and digestion of fatty foods.

The study will be conducted by the department of medicine, under the direction of Dr. M. H. Streicher.

STUDY NEW SULFONE PRODUCT; HOFFMAN—LA ROCHE GRANT TO U. OF I.

A research grant of $2,700 has been received by the University of Illinois college of medicine from Hoffman-La Roche, Inc., of Nutley, N. J. The grant will be used for the study of the use of a new sulfone product, intestinal antiseptic, in the treatment of chronic ulcerative colitis.

The study will be conducted by the department of medicine, under the direction of Dr. Michael H. Streicher.

Before marriage this question should be put: Will you continue to be satisfied with this woman's conversation until old age? Everything else in marriage is transitory.

—Nietzsche

Original Articles

THE DIAGNOSIS OF ACCESSIBLE CANCER

Danely P. Slaughter, M.D.
CHICAGO

By the term (interpolate) accessible cancer is meant a malignant tumor so situated in the body that it is visible or palpable. By extending this definition to include tumors that can be visualized with the aid of instruments, with or without optical systems, it is apparent that most of the cancers affecting the human body are "accessible" in the sense that they can be visualized or palpated. Therefore, most cancers should not be difficult diagnostic problems.

Because of the many variables affecting the incidence of cancer, such as sex, race, age, and even geographic areas, it is difficult to arrive at an exact percentage incidence of cancer in various anatomic locations. Table 1, taken from the United States Public Health Bulletins of 1944 gives a fair overall estimate of cancer incidence for the white population of the United States as a whole. This table is based on conservative estimates gathered from many sources, and it is not a synthesis of reported death rates of cancer, which would be an entirely different approach, with different end result figures. This discussion is directed toward the clinical diagnosis of cancer, not autopsy recognition.

A crude breakdown of Table 1 is presented in Tables 2, 3, 4, and 5, listing the visible and palpable cancers, those visible with instruments, and those considered to be inaccessible. These lists can not be exact and their discrepancies will be discussed under their separate headings.

Table 2 is largely self-explanatory. Cancer involving the areas or organs listed here can be seen with the naked eye and constitute twenty-one and eight tenths per cent of the total estimated cancer incidence per one hundred thousand white population. Cancers in these areas should almost never be a diagnostic problem. As the Illinois Cancer Bulletin has so thoroughly emphasized, the diagnosis of cancer is facilitated by the attitude of mind of "think of cancer first." The only absolute way of diagnosing cancer is by biopsy, and this is the simplest possible maneuver on such surface lesions. The only equipment necessary is a bistoury blade and small forceps, or punch biopsy forceps, and procaine. The pathologist's definition of the tissue can be considered a "legal" diagnosis of cancer.

In a doubtful lesion where there is the slightest suspicion of cancer, a biopsy should be done. This does not mean carrying the principle of biopsy diagnosis to the extent of application to nevi in infants; but it should be emphasized that it is far more serious to miss an early, easily curable malignant lesion by neglect to do a biopsy than it is to treat a benign lesion as cancer in most of these surface areas.

Table 3 lists the sites and occurrence figures of palpable cancer. Such tumors comprise twenty-nine and three tenths per cent of cancer incidence. Palpation diagnosis of cancer of the rectum or prostate is fairly simple, and biopsy diagnosis of tumors of the rectum is a very easy procedure. Biopsy diagnosis of tumors listed in the other sites requires an operative procedure of

From the Department of Surgery, University of Illinois College of Medicine, and the Tumor Clinic of the Illinois Research and Educational Hospitals, Chicago, Illinois.

TABLE 1
INCIDENCE OF CANCER
Per 100,000 white population, U.S.A.

Site and Sex	All Ages (Standardized)
Lip:	
Male	10
Female	2
Tongue:	
Male	4
Female	1
Mouth:	
Male	5
Female	1
Esophagus:	
Male	5
Female	1
Stomach:	
Male	31
Female	16
Intestines:	
Male	17
Female	18
Rectum:	
Male	15
Female	10
Liver:	
Male	5
Female	7
Pancreas:	
Male	5
Female	3
Larynx:	
Male	5
Female	0
Lung, bronchus:	
Male	11
Female	3
Prostate: Male	22
Testes: Male	2
Penis: Male	1
Uterus: Female	54
Ovary, fallopian tubes: Female	11
Vagina, vulva: Female	3
Breast: Female	58
Kidney:	
Male	4
Female	2
Bladder:	
Male	12
Female	6
Skin:	
Male	38
Female	28
Brain:	
Male	2
Female	2
Bone:	
Male	4
Female	3

TABLE 2 — VISIBLE

Lip	12
Tongue	5
Mouth	6
Penis	1
Vagina, vulva	3
Skin	66
	93 = 21.8%

TABLE 3 — PALPABLE

Rectum	25
Prostate	22
Testes	2
Ovary, fallopians	11
Breast	58
Bone	7
	125 = 29.3%

greater magnitude. Any mass in the testicle demands investigation, as does likewise any mass in the female pelvis whose diagnosis is not definite on clinical grounds, such as fibro-myoma of the uterus. There is no way to differentiate early and potentially curable, ovarian cancer from a benign ovarian cyst than by transperitoneal exploration.

Cancer in the breast cannot be detected by any means until it becomes palpable. In the early stages when barely palpable, it is not clinically diagnosable, but this is of course the ideal time to attack the tumor. When a breast cancer has been allowed to grow until it produces the unmistakable clinical signs of mammary carcinoma, the best chance for cure has long been lost. Therefore, it is imperative that every suspicious solitary breast mass be diagnosed by microscopic examination. This means surgical removal of the mass for biopsy purposes. Once the diagnosis is established further treatment may be proceeded with as indicated. Bone lesions are included in the list of palpable tumors because, although not all of them produce palpable deformity by the time a physician is consulted, the majority of such cases do have some palpable change. An x-ray picture will of course show changes produced by tumor, even before swelling or deformity is evident. X-ray changes will be apparent usually as soon as the patient experiences pain, which is a constant localized symptom of bone tumor. This last observation is in contrast to acute

Figure No. 1 — Photograph of patient with carcinoma of left lower lip extending to and involving the commissure. This is an obvious clinical diagnosis but it should be verified by biopsy because a chancre could resemble this.

Figure No. 2 — Photograph of a basal cell carcinoma involving the skin of the left upper lip. This is a typical basal cell lesion with raised pearly border and central ulceration. For absolute confirmation biopsy should always be done on such lesions.

Figure No. 3 — Photograph of tongue with luetic glossitis, leukoplakia, and squamous cell carcinoma the size of a quarter located on right anterior dorsum of tongue. This is easily accessible for biopsy confirmation.

osteomyelitis, in which x-ray changes are not visible for some time after pain begins. The differential diagnosis between osteomyelitis and bone tumor is not a serious problem except in the case of Ewing's tumor. Of greater clinical importance is the differentiation between primary and metastatic bone lesions, and here, again, biopsy can be the only final arbiter. Although not included in Table 1 of estimated cancer incidence, carcinoma of the thyroid would be included in Table 3 of palpable tumors. Thyroid cancer, although not common, is by no means rare, and it is one tumor that is obviously palpable. This tumor usually occurs as a unilateral, solitary swelling of the thyroid in an individual without toxic symptoms. Such a clinical picture should always arouse suspicion and indicate surgical exploration. Again, if one waits till the lesion is fixed, and a recurrent laryngeal nerve is involved, the chance for cure is gone.

TABLE 4 — VISIBLE WITH INSTRUMENTS

Esophagus	6
Stomach	47
Larynx	5
Lung	14
Uterus	54
Bladder	18
	144 = 33.7%

Table 4 lists the sites and occurrence figures of those cancers which are visible with instruments. These lesions comprise thirty-three and seven tenths per cent of cancer incidence. Esophageal lesions can be demonstrated by x-ray techniques, and then may be visualized directly and biopsied through the esophagoscope. Stomach lesions are included in this table because they can be visualized through the gastrocope, although this instrument is essentially an aid to flouroscopic diagnosis. Tumors of the larynx are easily visible either by use of direct or indirect laryngoscopy, and may be biopsied in either manner. Tumors of the lung are always demonstrable by x-ray, but their actual diagnosis depends on biopsy and microscopic definition. Most primary lung tumors can be visualized and biopsied through the bronchoscope. Inclusion of uterine tumors with those listed as visible by the use of instruments is probably questionable. At least a vaginal speculum is required, and since epidermoid carcinoma of the cervix is far more common

Figure No. 4 — Photograph of squamous cell carcinoma of ear, arising from skin in a characteristic location.

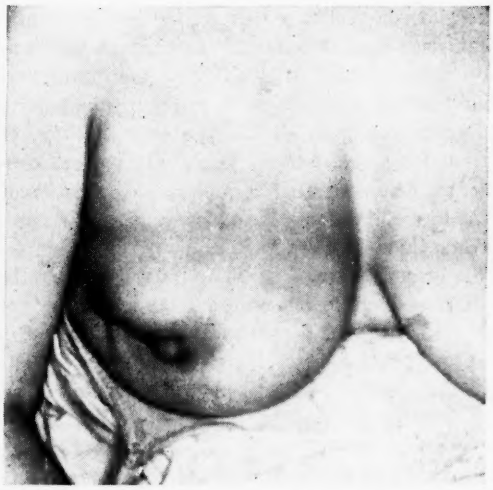

Figure No. 5 — Photograph of patient with moderately advanced carcinoma of the right breast, showing the characteristic clinical findings of lateral flattening of the breast, nipple retraction, and deep indentation of the skin overlying the tumor which is comparatively small and located in the mid outer quadrant of the right breast.

than corpus cancer, inclusion here seems justified. Biopsy diagnosis of cervix cancer is easily performed, requiring usually only a "punch" biopsy forcep. As a rule anaethesia is not required, and only rarely is an operating room procedure necessary. Corpus cancer requires a dilatation and curettage for diagnosis but this certainly is one of the simplest of operative procedures. Frequently an office procedure using the Novak curette will suffice. Bladder cancer is easily visualized through the cystoscope and almost all areas of the bladder mucosa can be biopsied through this instrument.

Table 5 lists the site and occurrence figures of those cancers considered to be inaccessible. These comprise only fifteen and two tenths per cent of the total number of human cancer. Analysis of this group shows that diagnosis is not necessarily difficult because of anatomic location, although tumors so situated cannot usually be diagnosed in early stages. Tumors of the intestines consist mainly of lesions of the colon, and most of these are easily demonstrable fluoroscopically. Actually many of these tumors can be visualized and biopsied through the proctoscope, as the incidence of colon cancer is higher in the distal colon. As such these lesions should properly be classified with those in Table 4 as visible with instruments, but the occurrence rate in various portions of the colon is not stated in Table 1. Tumors of the liver are not accessible except by laporotomy, and this is also true of tumors of the pancreas. Kidney tumors lend themselves well to x-ray demonstration and urologic investigation. Brain tumors require neurosurgical techniques for their definition, but indications for such study should usually be fairly clear.

TABLE 5 — INACCESSIBLE

Intestines	35
Liver	12
Pancreas	8
Kidney	6
Brain	4
	65 = 15.2%

The obvious importance of early diagnosis of cancer cannot be emphasized too strongly nor too often. If cancer began with dramatic initial symptoms our problem would be easier in that our attention would be more forcefully aroused. However that may be, the medical profession has a tremendous responsibility in the detection of the early subtle tissue changes of malignant growth, before the patient is desperately ill, and while the chance for cure is greatest. We must

develop the habit of suspecting cancer in any equivocal diagnostic lesion. This means that cancer must be ruled in or out, and this means that no treatment should be given until a definite diagnosis is established. The only absolute, or what I frequently term "legal," diagnosis of cancer at the present time is microscopic definition of the tissue, in other words, biopsy. It is, of course, true that in certain organs (for example, the breast) most of the cancerous lesions can be diagnosed with an accuracy approaching one hundred per cent by surgeons properly trained in surgical pathology. However, if there is any doubt, even the best trained surgeon should resort to microscopic confirmation.

Fortunately, as this discussion indicates, approximately eighty-five per cent of the cancers affecting humans may be considered to be accessible so that they can be visualized or palpated. Most of these are easily accessible to biopsy by simple procedures, so that an unequivocal diagnosis can be established without undue effort. Those tumors situated in locations requiring specialist examinations produce symptoms which any doctor should recognize as indicating such examination. Blood in the urine, persistent hoarseness, or difficulty in swallowing are simple signposts which require a complete diagnosis before any empiric treatment is given. There are no specific symptoms of cancer in any organ. Cancer presents itself clinically either as an abnormal mass of tissue, such as an ulcer of the lip, or lump in the breast, or it produces symptons of interference with the function of an organ, such as persistent indigestion, chronic cough, or bleeding from the rectum.

Precisely for the reason that many benign conditions may produce these same signs of dysfunction, it is imperative that patients be given examinations adequate to establish a definite diagnosis, always remembering that biopsy, when anatomically possible, is the only absolute diagnosis. Special biopsy techniques, such as the Papanicolau vaginal smear, or aspiration biopsy, should be reserved for the hands of trained experts working in tumor clinics. As demonstrated here, the majority of malignant tumors are "accessible," and can be diagnosed by relatively simple techniques.

It should be emphasized that the two greatest errors in the diagnosis and treatment of cancer are failure to think of cancer as a possible diagnosis, or failure to perform adequate examination. More errors in the latter category are perhaps made in carcinoma of the rectum than in any other site. Too often the symptoms of carcinoma of the rectum are classified as being due to hemorrhoids or some such unsignificant lesion, and a digital examination or protoscopy is not done.

The engravings used to illustrate this article were supplied through the courtesy of the Illinois Division of the American Cancer Society.

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VESICOVAGINAL FISTULA

JOSEPH E. BELLAS, M.D., F.A.C.S., A.B.S.
The Collins-Bellas Clinic
PEORIA

The subject of vesicovaginal fistula has never ceased to intrigue the surgeon albeit its consideration has frequently been accompanied by a chill travelling up and down the spine. This mixed emotion is not likely to affect the routine or conventional surgeon who has carefully avoided experiences with this condition or has not undertaken the performance of surgery that might lead to the development of this complication. But for those who have exposed themselves to wider limits of surgery, the above remarks will strike a responsive chord.

Strange to say, despite spasmodic feuds in other fields, there appears to be no great desire on the part of the obstetrician, the gynecologist, urologist, or general surgeon to claim exclusive privileges in operating on this type of case.

From the standpoint of the patient hardly any condition can be conceived as more distressing. The constant dribble of urine, the helpless inability to control its flow, the irritation, chafing, the compelling necessity of having to wear pads in self defense, the social ostracism into which the patient is forced to retire, all contribute to a low morale and a chronic state of mental depression. These patients invariably are eager to undertake any procedure for the

Read before Section on Surgery at the 107th Annual Meeting of the Illinois State Medical Society, Chicago, Illinois, May 13th, 1947.

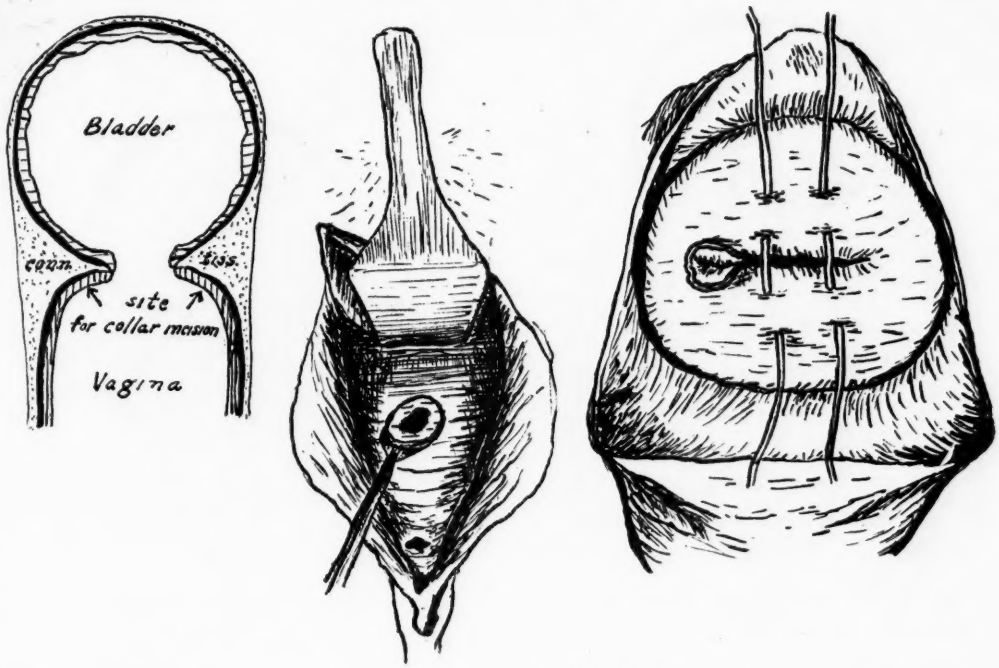


Figure 1. (After Martius)
a. Repair of vesicovaginal fistula, first step. (diagrammatic)
b. Collar incision.
c. Infolding of inner vaginal collar by vertical Lembert sutures.

eradication of the fistula in order to restore themselves to self sufficiency.

Although vesicovaginal fistulae may develop from the trauma of pressure in association with difficult or instrumental deliveries, from gynecological operations, or subsequent to radium therapy for uterine pathology, our own experience has been drawn mostly from cases of carcinoma of the cervix in which the Percy-Wertheim operation has been performed.

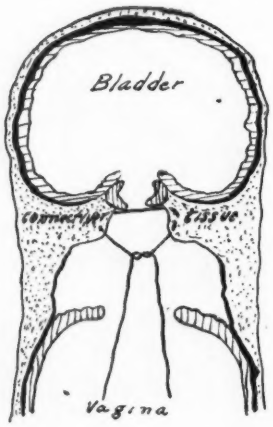
Especially during the early part of my association with the late Dr. Clifford U. Collins, before the popular advent of radium and x-ray therapy for carcinoma of the cervix, it was our custom to utilize the Percy cautery as part of the Wertheim procedure for the attempted radical cure of the carcinoma. It was not infrequent, after an apparently successful operation, to discover the presence of a vesicovaginal fistula during the convalescence. The necessity of performing a subsequent repair of the fistula became an anticipated procedure in undertaking an operation for cervical carcinoma. After having become a veteran in closing these vesicovaginal fistulae, Dr. Collins often remarked that he doubted if he ever cured a case of cervix carcinoma unless he also had a fistula to close in the same case.

As a result of numerous experiences in the repair of this condition which have included failures as well as successes, certain factors and details have established themselves in our minds as of considerable importance. The application of these details often may determine whether such an operation may meet with success or failure.

Five factors are listed:

1. *Time of operation.* The patient should be prepared to her optimum physical state. Sufficient time must be allowed to elapse so as to permit the tissues adjacent to the vesicovaginal fistula to regain approximately their normal vitality. It is courting disaster to expect devitalized tissues to heal after an operation of this nature. An arbitrary rule has been adopted which requires the interval of at least three months from the time that the necrotic process of infection has apparently subsided.

2. *Adequate exposure.* The location of vesicovaginal fistula may vary from case to case.



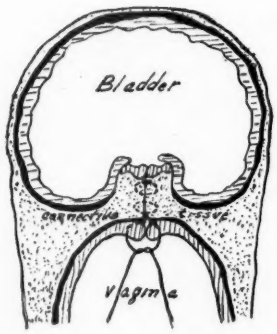


Figure 2. (After Martius)
a. Suture of paravaginal connective tissue, first layer as illustrated in Figure 1c. (diagrammatic)
b. Inversion sutures of connective tissue in two layers followed by suture approximation of vaginal layer. (diagrammatic)

Unquestionably high vesicovaginal fistulae require much freer exposure than those located low. In addition, one often encounters a contracted or constricted vaginal canal or vaginal vault, and an exposure greater than that afforded by the vaginal canal is decidedly necessary. Such an exposure can be obtained by utilizing the Schuchardt incision. This consists of an oblique vagino-perineal incision which is virtually the same as that of an oblique episiotomy. (See Figures 1a, 1b, 1c.

3. *Technical details of operation.* No attempt is made to expose and suture the edges of the bladder wall. As a matter of fact, this procedure is distinctly condemned as it is doomed to failure. A vaginal mucous membrane collar is created by a circular incision about 0.5 — 0.75 cm. from the margins of the fistula. The edges of this vaginal collar are then moderately undermined toward the fistula so as to permit of later infolding. The edges beyond the circular incision are then undermined laterally as widely as possible. It is particularly important to sever the numerous scar bands and strands that are present subjacent to the vaginal mucosa. This exposes the paravaginal connective tissue the suture of which is of prime importance in the repair of this fistula.

This portion of the operation must be painstakingly and laboriously performed by the surgeon, in view of the fact that tissues of tissue-paper thinness are often encountered.

The vaginal collar may be dealt with by infolding it in the manner described by C. U. Collins bringing the vaginal edges toward the bladder by a strand drawn through the urethra (see figures 3 and 4) and followed by the application of 2 - 3 overlying purse-string sutures; or the vaginal collar may be inverted toward the bladder after the method of Füth and Martius by applying 2 - 3 layers of interrupted vertical or horizontal Lembert sutures through the paravaginal connective tissue. It is important that none of these sutures be applied under tension. The thoroughness of the preliminary undermining of the vaginal mucosa and exposure of a wide area of connective tissue surface, will almost always eliminate this. The final step is the suture of the remaining edges of the vaginal wall preferably in a line perpendicular to the direction of the connective tissue sutures.

The details of the above technic can be more readily appreciated by a study of Figures 1, 2a, 2b, 3 and 4.

4. *Choice of suture.* Catgut, silk, silkworm gut, silver wire, and probably many other sutures have been used in this operation. In our experience with catgut, a certain proportion of cases failed to heal thus necessitating a second operation for repair. Some cases required a third, fourth and even fifth operation before final closure was accomplished. One case failed to

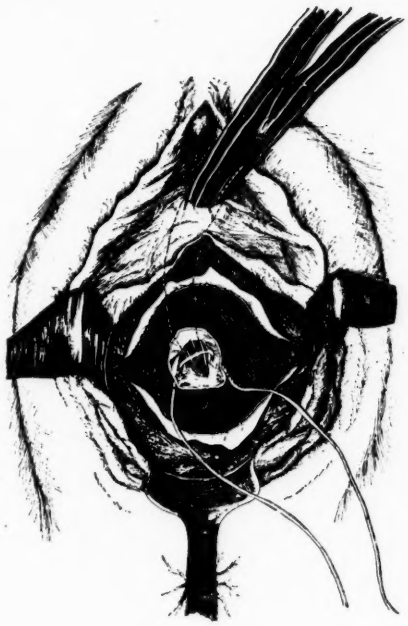


Figure 3. (After C. U. Collins)
The Collins method of inverting the vaginal mucous membrane collar toward the bladder.

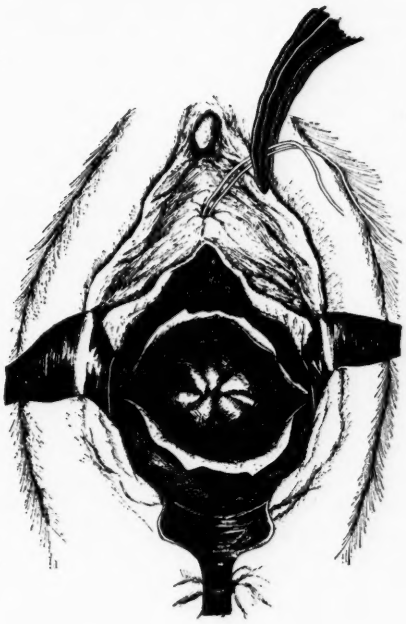


Figure 4. (After C. U. Collins)
Purse string sutures of paravaginal connective tissue while inversion of vaginal collar is maintained by suture drawn through the urethra.

heal after four attempts. Some of the cases had been operated elsewhere before their vesicovaginal fistulae were finally repaired by us. All in all, however, despite secondary surgery, failures and heartaches, our results compared favorably with those obtained elsewhere.

In more recent years, since I have become more interested in tissue reaction to sutures, I had been seeking a suture which would be relatively non-reacting. With the development of Plastigut, a plastic-incorporated non-reacting non-absorbable suture, it was decided to utilize it in three cases of vesicovaginal fistula. All three cases healed primarily much to the satisfaction and relief of all concerned. I believe there is a general tendency to consider a non-absorbable suture more useful than catgut in the repair of this particular condition.

5. *Postoperative Care.* The insertion of an indwelling straight catheter in the bladder is of course essential to prevent tension in the bladder from accumulation of urine. I have adopted the practice of suturing the catheter to the labia. This insures the catheter from becoming displaced and is a strong deterrent in preventing the patient from pulling it out. The catheter is left in for 14-16 days. The catheter must not be allowed to become obstructed, and frequent irrigations with no more than one ounce of boric acid or of saline at a time are instituted. The nurses must be told of the condition and of the precariousness of the anticipated result so as to secure their complete cooperation. It is advisable to give the patient prophylactic doses of sulfadiazine during the period of catheterization.

We have utilized the method of inserting ureteral catheters up to each kidney in order to reduce the amount of urinary flow into the bladder but have not become convinced that this will increase the percentage of successes. However, our experience with this method is too limited to pass a definite opinion.

REPORT OF A CASE

A sixty-four year old woman was operated for a relatively localized carcinoma of the cervix by the Percy-Wertheim operation in which the Percy cautery was utilized. She was discharged on the seventeenth postoperative day. A few days later she noticed a leakage of urine and on examination disclosed the presence of a fairly high vesicovaginal fistula, 1.5 x 1 cm., and a contracted vagina and vaginal vault which

had been noted prior to her operation. During the next three months, the patient was placed on prophylactic doses of sulfadiazine from time to time, and had to protect herself by wearing sanitary pads constantly.

On June 27, 1946, repair of the high vesicovaginal fistula was undertaken. The operation was performed in accordance with the technic described above.

An oblique Schuchardt incision was made in the left perineum, entering the lower third of the vagina. This gave better exposure to the vesicovaginal fistula which was associated with a very narrow vaginal canal. Bleeding points were caught and tied. A weighted speculum was inserted, and Guy sutures were placed at 12, 7, and 5 o'clock, wide of the fistula. A circular incision, penetrating through the vaginal mucosa was made about ½ to ¾ cm. from the margins of the fistula. The outer vaginal ring was then undermined carefully by scissors and knife dissection so as to free the vaginal wall from the bladder on all aspects, thus exposing the fascial tissue. The vaginal collar around the fistula was also undermined moderately. The anterior and posterior edges of the vaginal collar were then caught with a suture, and the ends left long. Curved forceps were introduced through the urethra to emerge through the vesicovaginal fistula, and the ends of the suture were placed in the jaws of the forceps and drawn up through the urethra. This inverted the vaginal collar. Interrupted sutures of #0000 plastigut were then applied to the fascia, external to the fistula, in a transverse direction. A second layer of interrupted plicating suture of #0000 plastigut was then applied. A semi purse string suture of #00 plastigut was applied as a third layer at each end. The suture emerging through the urethra was then released and pulled through. There was some resistance before the suture finally gave, prior to its removal. The margins of the vaginal wall were then approximated anteroposteriorly by a series of interrupted chromic #00 catgut sutures. The Schuchardt incision was then closed by a series of interrupted through and through plastigut sutures, including the skin. The edges of the mucous membrane and skin were then approximated by interlocking suture of #0000 chromic catgut.

A gauze sponge was placed in the vaginal vault so as to apply pressure against the operative field in order to eliminate the dead space. A catheter was introduced through the urethra into the bladder and it allowed the free escape of some bladder urine, only faintly blood tinged. The catheter was then fixed to the labia minora on each side by suture. Through the catheter, one-half ounce of methylene blue solution was injected into the bladder and pumped back and forth. Inspection of the gauze within the vaginal canal failed to show any methylene blue color; therefore, it appeared certain that the closure was water-tight.

The postoperative care described above was followed during the hospital stay. The catheter was withdrawn on the fifteenth day after another methylene blue and vaginal gauze test was found negative. She left the hospital on the twenty-first postoperative day with evidence of excellent control and the ability to void 250 cc. at one time. The patient has been inspected frequently since and has retained complete urinary control with not the slightest suggestion of leakage through the former vesicovaginal fistula.

Were this the end of the story, everyone would have lived happily ever after. What follows, however, is a sad tale as to how a surgeon in one moment's thoughtlessness could undo a completely successful result which he had striven to achieve.

After this patient had undergone four months of freedom from any leakage, I observed the presence of a suture at the site of repair over which the mucous membrane had apparently become eroded. I could not resist the temptation of trying to remove the suture; and as a result of the manipulation that followed, I was informed the following morning that leakage had recurred.

I allowed one month to elapse in the hope that the fistula might close spontaneously but also to make certain that any local tissue reaction from the manipulation had been practically eliminated.

Needless to say, the fistula did not close and in consequence a second procedure for repair of the vesicovaginal fistula was undertaken on November 26, 1946 five months from the original repair.

I performed this operation without the aid of a Schuchardt incision; although the exposure was rather limited, I found that I could now carry out the procedure fairly satisfactorily. A circular incision was made around the pin-point vesicovaginal fistula located in the upper third of the anterior vaginal wall. The mucous membrane, lateral to this incision, was then gradually and carefully undermined on all sides as far as possible. The vaginal collar surrounding the fistula was then moderately undermined toward the fistula. I first attempted to introduce a forceps through the urethra, bladder, and through the vesicovaginal fistula for the purpose of withdrawing a catgut suture which had fixed the edges of the vaginal collar for inversion. The fistula, however, was too small, and I was afraid to enlarge it. The edges of the vaginal collar were, therefore, united by the catgut suture externally. Three sutures of interrupted plastigut, #0000, were then applied transversely so as to further invert the vaginal collar and bring the extra-vesical tissues into approximation. This was followed by two purse string sutures of #0000 plastigut in two more layers. I, thus, had three layers of approximated tissue, superimposed upon one another. Methylene blue solution was injected into the bladder through a catheter and pumped back and forth without any signs of leakage through the site of the fistula. The vaginal mucosa was then approximated in a longitudinal direction by continuous interlocking #00 chromic catgut.

An indwelling catheter was inserted and fixed to the labia by suture. A vaginal pack, to be removed in three days, was inserted into the canal to exert pressure against the operative site.

During the operation no evidence of local recurrence of the original carcinoma was found.

Postoperative progress was essentially uneventful although there were some anxious moments when lack of nursing attention permitted plugging of the catheter and urinary retention up to 400 cc. However, on the fourteenth postoperative day a methylene blue vaginal gauze test was negative and the catheter was detached from the labia and removed. The patient was discharged from the hospital on the sixteenth postoperative day with no signs of leakage, much to the relief of the author not to mention of the patient.

To date there has been no evidence of any urinary incontinence whatsoever. The writer has learned a bitter lesson resulting from thoughtless interference but is not very likely to repeat the same performance.

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MICROBIOLOGICAL ASSAY OF THE ANTIBIOTICS

E. E. VICHER, Ph.D. AND S. A. LEVINSON, M.D.
CHICAGO

Introduction.— Widespread use of the antibiotics, penicillin and streptomycin particularly, in treating infectious diseases has necessitated the development of assay methods for these antibacterial agents. Inasmuch as no accurate chemical test, colorimetric or otherwise, is available to date, we are completely dependent upon biological assay technics. Since we are dealing with antibacterial agents, the tests most likely to be of value are those in which the inhibitory or lethal effects of the unknown are tested against various species and strains of known susceptible organisms.

Certain bacteriological tests should be run routinely in connection with the antibiotic treatment of an infection. The first of these is the identification of the infecting organism. It is most always of advantage to determine this factor prior to treatment if possible. Secondly, an attempt should be made to determine the sensitivity of this organism to the antibiotic of choice to be employed in treatment. In this way a more accurate conception of adequate levels of the agent necessarily maintained in the body fluids may be had. The last of the necessary technics to be performed is that of determination of the level of antibiotic in body fluids (generally the blood) after beginning treatment with the agent. This enables the clinician to control the amount given in order that maintenance of therapeutic quantities is assured.

Basic methods available at present for assay of the antibiotics have been developed specifically, for the most part, for research and industrial laboratories. Samples taken at various steps in the preparation of these agents are tested for potency in an effort to keep production functioning with greatest efficiency.

The most common methods are: 1. Serial dilution method in liquid or solid medium using a sensitive organism; 2. a plate assay in which the diameter of the zone of inhibition around a cylinder (or cup) containing the antibiotic is used to determine the potency; and 3. a turbidimetric technic employing a standard curve constructed from turbidimetric measurements of bacterial growth in different concentrations of the unknown solution.

These methods, some modified, are now employed in the clinical laboratory for determination of antibiotic levels in body fluids. It is this type of assay that is of importance and interest to physicians and it will therefore be the subject for discussion. We will still, however, hold to the general technic classification.

Serial Dilution Methods.— Fleming[1], first used the serial dilution technic in 1929 to determine the inhibitory power of penicillin on various organisms. The precision of his technic and the following modifications depends upon steps in the dilution procedures. Their accuracy is given by different workers as varying from ±50% to ±100% and is considered to be satisfactory enough for clinical laboratory determinations.

The methods require sterile samples and use of aseptic technic throughout the procedure. To assure sterility, samples may be Seitz filtered without loss of potency. The test can be made to cover a wide range of antibiotic levels (necessary particularly for urine samples but ordinarily not so for other body fluids) and then narrowed down for more accurate final values by "bridging" large interval dilutions.

The first modification for clinical laboratory

From the Research and Educational Hospital Laboratory, University of Illinois College of Medicine.

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use to handle small amounts of blood or body fluid was that of Rammelkamp,[2] (1942) for penicillin determination. He used a strain of *Streptococcus hemolyticus* of high penicillin sensitivity and hemolysis of added red blood cells as an end point indicator. The last tube of the series showing no hemolysis was that containing the greatest dilution of penicillin still inhibiting the growth of the test organism. It therefore, was the endpoint tube in the test. By comparison with a standard solution of penicillin (to serve as a control and to determine sensitivity of the test organism), the concentration in the unknown sample may be determined as follows: Concentration in unknown sample (0.2 ml. of body fluid) = dilution factor x sensitivity value of the test organism. The level expressed in U/ml. is then obtained by multiplying the product obtained above by 5.

Example:

Dilution factor (endpoint tube): 1:64

Sensitivity value of test organism: 0.0039 U/ml.

Concentration of penicillin in unknown sample: 64 x 0.0039 x 5 = 1.248 U/ml.

Wilson[3] (1945), and Rake and Jones[4] (1943) have modified the above method so that determinations can be made in 3 to 3½ hours and 55 to 90 minutes respectively as compared with Rammelkamp's original 18 hour incubation period.

Fleming[5] (1945), reported the use of a slide cell technic (orginally devised by him in 1924) and a capillary tube technic for determination of penicillin in body fluids sensitive enough to determine levels of 0.03 U/ml. One cited advantage was the small quantity of sample (50 cu. mm.) needed for the assay. Another technic which is essentially a modification of Rammelkamp's original dilution method was developed by Rosenblatt et al.[6] in 1944. The patient's serum or other body fluid, a standard solution of penicillin and a standard organism (*Streptococcus pyogenes*, C-203) are required. The tests are performed by adding standard and unknown in proper dilutions to brain heart infusion broth (Difco) and inoculating with the streptococcus culture. After 18 hours incubation, the endpoint is read as that amount of penicillin and sample which will inhibit the growth of the organism. Concentration in the unknown sample may be calculated by comparing with the penicillin standard.

A modification of the technique of Rosenblatt et al. is used in our laboratory.

A series of ten tubes is set up, each containing 1 ml. of brain heart infusion broth (Difco). To the first tube of the series is added 1 ml. of the unknown sample (body fluid), necessarily sterile. Serial dilutions are then prepared by transferring 1 ml. of mixture from the first tube to the second tube, mixing, and repeating the process for the ten tubes series.

A second set of ten tubes is set up in a similar manner employing a standard solution of penicillin (5 U/ml.) as a control series and to provide for the determination of the sensitivity of the test organism.

To all tubes is added 0.02 ml. of a 12 hour brain heart infusion broth culture of a sensitive strain of *Bacillus subtilis* and they are then incubated 12 hours (overnight) at 37°C.

The endpoint is read as the last tube showing complete inhibition of growth of the test organism. The concentration of penicillin in the unknown is calculated (in a manner similar to that employed in Rammelkamp's method) by multiplying the reciprocal of the value of the greatest dilution inhibiting the growth of the test organism by the sensitivity value for the test organism obtained by reading the control test.

Example:

Greatest inhibiting dilution: 1:64

Sensitivity value of organism: 0.020 U/ml.

Penicillin concentration in unknown:

64 x 0.020 = 1.28 U/ml.

The above basic method is used for both penicillin and streptomycin determinations. Any organism showing a high sensitivity to the antibiotic may be employed as a known test organism. For penicillin determinations we routinely employ a susceptible strain of *Bacillus subtilis*. The Oxford strain of *Staphylococcus aureus* is very commonly used.

Kakavas and Scott[7] (1946), reported the use of a strain of *Streptococcus dysgalactiae* as the test organism for penicillin assay. They chose this streptococcus isolated from a bovine mastitis because of its high penicillin sensitivity (.006 —.008 U/ml.) and its resistance to normal blood bactericides.

For streptomycin determinations tryptose broth is substituted for the brain heart infusion broth and the test organism is a sensitive strain

of *Bacillus circulans*. Other streptomycin sensitive organisms have been employed, e.g., *Klebsiella pneumoniae*.

Results obtained by the serial dilution technic are reasonably accurate. The lower limits of concentration of antibiotic that one is able to determine by the above technics depend upon the antibiotic sensitivity of the test organism. The greater the sensitivity of the organism the lower the level of antibiotic. We are able to assay quantities equivalent to approximately twice the sensitivity value of the test organism (our first dilution provides the multiplicand of 2).

Plate Assays.—Plate assays of the antibiotics in use at the present time are essentially technics modified from the original Food and Drug Administration methods for testing antiseptic ointments, powders, etc. (Circular No. 198, U.S. Dept. of Agriculture, December, 1931). Several of these modifications are in use today. The technique used by the Food and Drug Administration at present, according to Knudsen and Randall[8] (1945), is as follows:

Petri plates (20 x 100 mm.) containing 21 ml. of a yeast beef agar are employed. These are flooded with 4 ml. of a melted, cooled (45° - 55°C.) agar inoculated with a 16-24 hour yeast beef broth culture of *Staphylococcus aureus*, 209-P. This added layer is allowed to congeal. Four (4) glass cylinders of specified size are placed on these plates (blotter or filter paper discs may be used). One cylinder is filled with a solution containing 1 U/ml. penicillin, and a second with a solution containing 0.25 U/ml.

The third and fourth cylinders are filled with dilutions of the unknown estimated to compare with those of the known penicillin solution. The glass cover is replaced by the unglazed porcelain cover and the plates incubated at 37°C. for 16-18 hours. The resulting zones of inhibition are measured to the nearest 0.5 mm. The zones of inhibition of the two known penicillin standards characterize the particular curve to be used in converting the zones of inhibition of the unknown samples to Oxford units. A "family of curves" should be set up on known samples by each laboratory employing this technique to facilitate these determinations.

A plate technique involving the use of sterile absorbent paper discs on the inoculated agar was reported by Sherwood et al.[9], in 1944.

Sherwood and his co-workers seed nutrient agar in flasks with a standardized spore suspension of a strain of *Bacillus subtilis* so as to contain 2 x 10^5 spores/ml. Twenty-five ml. portions are pipetted into 90 mm. petri dishes to give a depth of agar of approximately 4 mm. and allowed to congeal.

Four sterile filter paper discs are evenly spaced on the surface of the agar. With a 4 mm. loop, two loopfuls of undiluted standard are added to one disc and 2 loopfuls of a 1:4 dilution of that standard are placed on a second disc. Corresponding concentrations of unknown are placed on the other two discs in the same manner.

The plates are prepared in quadruplicate and incubated 5½ hours at 37°C. The resulting zones of inhibition are measured with a mm. scale.

The potency of the unknown is calculated by use of a formula as a percentage portion of the known standards run concurrently as shown in Table 1.

The average standard error of the above technic has been calculated by the authors as 4.3%.

Other modifications of plate technics appear in the literature (10, 11, 12, 13,). Any one of the methods can be used in a clinical laboratory. Certain advantages may be cited:

1. A large number of samples may be assayed daily without too much tedious manipulation.

2. Samples need not be sterile.

3. Samples of potency from 0-500 units involve relatively few dilutions as compared with serial dilution technics.

It must be remembered that all possible variable factors must be kept constant. These include; organism and amount of inoculum; make-up and pH of media employed; depth of agar in plate; and others which can effect the size of the zone of inhibition.

Any of the various modifications may be employed for assaying any one of the antibiotics by use of an organism sensitive to the agent in question. The procedure for the determination of the amount of antibiotic in general is one of calculation by comparison to standard curve values.

TABLE 1

Results obtained (zones of inhibition) in a test run:

	Standard		Unknown	
	Diluted 1:4 (25%)	Undiluted (100%)	Diluted 1:4 (25%)	Undiluted (100%)
Plate I	27.5	32.5	23.5	29.5
Plate II	27.0	31.5	23.0	28.0
Plate III	26.5	31.0	24.0	29.0
Plate IV	27.0	32.0	25.0	30.0
Sums	$108.0 = S_1$	$127.0 = S_2$	$95.5 = U_1$	$116.5 = U_2$

Calculations:

$$\text{Potency} = \text{Antilog } (2 + d)\ \frac{(U_2 + U_1) - (S_2 + S_1)}{(U_2 - U_1) + (S_2 - S_1)}$$

d = log of ratio of greater dose to smaller dose (in above example: 4)

2 = factor for converting to %.

Example using values above:

$$\text{Potency} = \text{antilog } (2 + 0.602)\frac{(116.5 + 95.5) - (127.0 + 108.0)}{(116.5 - 95.5) + (127.0 - 108.0)}$$

Potency = antilog 1.6538 = 45%.

Turbidimetric Methods. — It is the opinion of most investigators that turbidimetric methods are too cumbersome for handling many assays. Although their order of accuracy (±10 - ±15%) is greater than that of either serial dilution or plate technics, the methods are somewhat unwieldly for the clinical laboratory. On the other hand, because of this increased accuracy their value in the antibiotic research and production laboratory is greater.

Technics are based on proportional inhibition of growth of a sensitive organism in a liquid medium as a function of the antibiotic concentration. Growth measurements are made with a photo-electric colorimeter. A standard curve is prepared daily with unknowns run in from 3 to 5 different dilutions.

Foster[14] (1942), reported on the first turbidimetric penicillin assay. He prepared varying dilutions of the penicillin standard and dilutions of unknown estimated to approximate final penicillin concentrations of the standard in a phosphate buffer. These are added to double strength nutrient broth previously inoculated with the test organism (*Staphylococcus aureus,* Oxford strain). The mixtures are incubated 16 hours at 37°C., shaken, poured into Evelyn tubes and read in the photelometer. Per cent transmission is plotted against penicillin concentration. Three to five levels are run on each unknown depending upon how many can be predicted to fall on the central portion of the curve. Penicillin concentration of the unknown is obtained by comparing transmission values with those on the standard curve.

Joslyn[15], (1944), reports on a turbidimetric assay which can be read in 4 hours. Osgood and Graham[16], (1947), investigated a turbidimetric assay method for penicillin, streptomycin, and trivelent organic arsenicals utilizing a short (3-hour) or long (overnight) incubation period. Control serum, known antibiotic-in-saline dilutions, and the unknown serum (or other body fluid) are each added to broth cultures of the test organism in sterile matched photo-electric colorimeter tubes and incubated at 37°C. in a water bath. Photolometric readings are made immediately and at intervals up to 2½-6 hours. A reading is made after overnight incubation if one is using the long incubation period procedures (for penicillin). From transmission values obtained at different time intervals, the

concentration of antibiotic in the unknown samples may be calculated by comparison with those obtained on the known standards.

Perhaps with further work along these lines, a simple turbidimetric technic for clinical laboratory assay of antibiotics will be available.

Antibiotics Used in Therapy. — It may be of interest to note approximately what concentrations of the most commonly used antibiotics, penicillin and streptomycin, might be expected in the blood of patients under treatment.

Fleming et al.[17], (1944), found that on intravenous injections of 15,000 units of penicillin, 4 units/ml. of penicillin were detected immediately in whole blood. In 10 minutes, this level fell to 0.5 units, in one hour to 0.03 units, and in three hours none was detectable. When 15,000 units of penicillin were given by intramuscular injection, and using the same time interval, 0.0, 0.12, 0.5 and 0.0 units of penicillin were present in the blood. Subcutaneous injections gave values similar to the latter. Intramuscular injections of 100,000 units gave a maximum of 2-3 U/ml. after 15 minutes with some still present in 5-6 hours. The intravenous drip method maintains a level dependent on the rate of infusion. By dripping intramuscularly 240,000 every 24 hours for 3 days, a level of 0.5 U/ml. was maintained.

Kornegay et al.[18], (1946), report the following values on blood levels in patients under streptomycin therapy. Following the intramuscular injection of 30,000 units every 3 hours, a level of 2.1 U/ml. occurs after 15 minutes, rising to 2.5 U/ml. one hour after injection and falling to 1.3 U/ml. at the end of the third hour. Intramuscular injection of 100,000 units every 3 hours results in a level of 1.1 U/ml. one hour after injection, and 2.6 U/ml. at the end of the third hour. Levels of 7.4 U/ml. are reported upon the third day of continuous therapy at this rate. Injection of 1 million units intravenously every 6 hours results in levels of 11 U/ml. at 1-1/3 hours and 10.5 U/ml. at 3 hours.

Continuous therapy with 1.8 to 2.0 gm. of streptomycin every 24 hours for long periods of time (as in tuberculosis therapy) results in levels averaging 16-18 U/ml. with occasional "highs" of 28 to 30 U/ml.

An organism sensitive to an antibiotic will ordinarily be inhibited by well under 1.0 U/ml. of the agent. Most streptococci are sensitive to less than 0.1 U/ml. of penicillin. Other Gram positive cocci fall well within a similar range. The same holds true with organisms sensitive to streptomycin, e.g., the sensitivity value of the average human tubercle bacillus appears to be approximately 0.39 U/ml.

It might well be emphasized, however, that most investigators maintain that it requires approximately 4 to 8 times the amount of antibiotic necessary to inhibit the growth of the organism "in vivo" as it does "in vitro". This fact must be considered in maintaining a therapeutic level of the antibiotic in the blood stream.

From the foregoing material, therefore, the importance of the role of microbiological assay of the antibiotics in the clinical laboratory cannot be emphasized too strongly. The adopted technic, whichever it may be, first furnishes the clinician with a picture of the work to be done by determining the sensitivity of the infective organism to the antibiotic of choice and, secondly, allows him to follow and adjust the course of its therapeutic effect.

DISCUSSION AND CONCLUSIONS

In our opinion, based upon experiences in several laboratories now routinely performing the various procedures accompanying antibiotic therapy, the serial dilution technic may be employed to greatest advantage where a relatively small number of levels and sensitivities are run (several tests per week). If, on the other hand, the laboratory is called upon to perform many more tests routinely, the plate technic is desirable. To determine antibiotic sensitivity of a greater number of organisms isolated from infective processes, it is simpler and less time consuming to use the streak plate technic. The plate technic of choice for determination of body fluid levels is that which employs the absorbent paper disc as a container for the fluid. The discs are more easily procured (or readily prepared in the laboratory), more easily placed on the surface of the seeded medium, and more easily filled with the sample. Filling the disc may be accomplished by use of the standard loop as previously described or by the addition of an average quantity of 0.1 ml. of sample with a sterile pipette (dependent upon size and thickness of disc). An average curve or "family of curves" is then prepared by the laboratory for its own use and determinations of unknown sample made by comparing sizes of zones of inhibitions as plotted on the curves.

There is need for an "ideal" assay of antibiotics whether it be by microbiological or chemical technics. Such an assay should possess the following attributes:

1. No pre-treatment of sample should be required.
2. Method should be amenable to large or small numbers of routine determinations.
3. Results should be rapidly obtained.
4. The endpoint should be unequivocal.
5. Results should be reproducible in the same and in different laboratories.

To date, the serial dilution technics and plate assay methods (with their accuracy of ±50 to ±100%) are those of choice for determination of the antibiotics in body fluids and are thus of most value to the clinical laboratory.

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PREVENTION AND TREATMENT OF COMPLICATIONS OF CATARACT SURGERY

LOUIS BOTHMAN, M.D.
CHICAGO

This subject may be divided into four sections, namely, (1) prophylaxis, (2) accidents preliminary to operation, (3) complications arising during operations and (4) post operative complications.

Prophylaxis. — As in preparation for all intra-ocular surgery, a careful physical examination should be done. Special reference should be made to urinalysis, blood pressure and the blood picture. If there is any tendency or history of anaemia, blood clotting time should be known. Diabetics should be sugar free if possible. The clotting time should be brought to normal and if the blood pressure is over 200 mm. of Hg. a venesection to draw off 500 cc. of blood should be done an hour or more before operation.

The conjunctiva and tear sac should be clinically clean. Cultures are not necessary. If any infection has been present as recently as a month before operation, an antiseptic solution should be used for at least a week prior to surgery.

The tension of the eye should be normal and the size to which the pupil will dilate should be known, the latter to learn whether an intracapsular operation should be attempted without iridectomy.

If the tension is elevated, the treatment will depend on the stage of the cataract. If the glaucoma is due to an intumescent lens causing a blocking of the chamber angle, myotics may control the tension and one may wait until the anterior chamber becomes deep and the cataract matures. *This is the preferable treatment when* waiting is possible and miotics reduce the tension. *If the above treatment fails a preliminary* iridectomy may be done followed by the lens extraction in 6 weeks. If the tension is con-

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sistently under 40 mm. of Hg., a combined lens extraction may be done safely. In such cases, an intracapsular extraction is preferable to lessen the danger of secondary glaucoma after operation.

If opiates are to be used after operation, test the patient out before to learn whether or not he becomes nauseated or vomits following their use. Some patients have emesis as late as 24 to 36 hours after morphine.

If the patient has asthma or any respiratory difficulty, it is well to use sutures or a conjunctival flap to lessen the danger of a wound rupture should he suffer an attack after operation.

It is well to let the patient practice looking down and to warn him against squeezing or "knifing" the lids. Even if a guide suture is used at operation, the ability to look down allows a better inspection of the wound when doing the dressings.

Pre-Operative Procedures. — By this term we mean, those maneuvers resorted to before the corneal section.

Clipping the lashes reduces the danger of infection.

Most surgeons use some form of akenesia. We believe this should always be done.

In addition, in case of a small, deep set eye, external canthotomy makes the operation easier.

Retro bulbar injection lessens the pain of iridectomy and the slight hypotony makes the intra-capsular extraction safer. In case a blood vessel is entered and a hematoma with proptosis occurs, stop, and postpone the operation until the eye returns to normal.

A superior rectus guide suture is of value to steady the globe while making the section and to hold the eye depressed in a patient who will not look down. Care should be taken not to pull too hard on this suture for it is possible by too much pull, to cause the wound to gape and lose vitreous especially during the extraction of the lens.

Cornea-scleral sutures are of value to insure firmer healing with less astigmatism and reduce the incidence of iris prolapse or post operative rupture of the wound and hemorrhage.

A conjunctival flap pulled down from above is an excellent safeguard against eversion of the cornea, gaping of the wound, as well as loss of vitreous and iris prolapse.

At operation. — Fixation on the internal rectus muscle with a superior rectus guide suture in place gives the best stable position of the globe for making a corneal section whether a Graefe knife or a Keratome is used.

Care must be made to lift up and not push on the fixation forceps regardless of the point of fixation. Pressure may cause the upper iris to ride in front of the Graefe knife and be cut or may even cause the vitreous to prolapse during the section.

The corneal section should be large, almost one-half the corneal if an intracapsular operation is attempted. It may be smaller for an extra capsular. If the section is too small, difficulty in delivering a large nucleus may easily cause vitreous loss. If the cataract knife is introduced into the anterior chamber with the cutting surface down, withdraw so that only the tip barely remains in the anterior chamber and turn it up quickly 180 degrees by rolling it up with the thumb while held against the index and second fingers first pulling the thumb down slightly, and pushing the fingers up a little.

To withdraw the knife entirely often empties the anterior chamber and on a new attempt, the iris is in the way making the section difficult or impossible without cutting the iris.

If, while making a keratome incision the iris prolapses, it is best to do an iridectomy at once before enlarging the incision with a scissors. There is less pain after the iridectomy as well as less trauma to the iris and the section is simpler and easier to do.

Hemorrhage during operation can come from 4 sources. These are (1) from the ciliary body which occurs when the counter puncture is too deep in the sclera. To avoid too deep an incision, do not lose sight of the tip of the Graefe knife. If it is invisible, it is too deep and a scleral incision will result. (2) From the iris at the time of the iridectomy, especially in senile patients with marked arterio-sclerosis. (3) Seeping into the anterior chamber from conjunctival bleeding. This can be avoided by careful pressure and adrenalin before the corneal section is made. (4) Expulsive choroidal hemorrhage which is an unavoidable tragedy. Should the latter occur, enucleation should be done at once.

When hemorrhage is seen in the anterior chamber, it should be irrigated before proceeding with the extraction.

To do an extraction through a round pupil, the latter should be able to dilate 7mm. If the pupil will not dilate widely under cycloplegia, do an iridectomy.

We have seen the iris prolapse as often with as without a root iridectomy[1] and when doing a round pupil extraction, omit the iridectomy.

If a vitreous prolapse occurs before or after extraction of the lens through a round pupil, iridectomy should be done. In such cases without iridectomy, we have seen severe iritis occur when the iris rolled up under the superior ciliary body.

If vitreous prolapses before delivery of the lens, a spoon or loop extraction should be done.

If it occurs after extraction any cornea-scleral sutures should be tied and any vitreous which remains between lips of the wound should be snipped off.

In doing an extracapsular extraction we prefer a toothed forceps and attempt to get a big round opening in the anterior capsule. This is difficult to do with a cystotome in cases with tense capsules, and if a large portion of the anterior capsule is left, a dense secondary cataract inclosed in capsule remnants may result and needling such cases is extremely difficult.

After extracapsular extraction, saline irrigation of the anterior chamber hastens clearing of the pupillary space and lessens the danger of secondary glaucoma.

After irrigation, attempt to replace the iris. If any cannot be easily replaced, it is better to snip it off to prevent a subsequent anterior synechia or incarceration.

An occasional accident at operation is pressing the lens back into the cavum occuli. This can be avoided by placing a spatula on the scleral lip of the wound before pressing on the lower limbus. This maneuver directs the superior pole of the lens up and out instead of back and down into the vitreous. If the lens is in the vitreous, it must be spooned out with a lens loop or spoon.

After operation the akenesia may work so well that the lids cannot be closed. If this happens, we use Meyer Weiner's method. A thin wisp of cotton is placed over the lids which are held together and saline or boric solution dropped on while it is very gently smoothed and pressed against the lid skin. This acts just like a collodion dressing and comes off easily at the time of the first dressing. An antiseptic ointment is used in the eye after operation. If an iridectomy has been done, atropine ointment is used and the eye dressed in 48 hours. If extraction through a round pupil has been done, eserine ½% ointment is used and atropine ointment used in 24 hours. At subsequent dressings enough atropine ointment is used to keep the pupil dilated to 6mms.

Postoperative. — The most frequent post operative complication is hemorrhage. This may remain from the operation or may occur at any time after operation. Small hemorrhages may disappear in 24 hours. Most hemorrhages occur on the fifth day and are due to minor wound ruptures. The slightest motion of the wound lips may rupture some of the new formed superficial blood vessels and lead to hemorrhage into the anterior chamber. As a rule, it will be gone in 24 hours. If the hemorrhage is large, an anterior chamber puncture with a keratome at the 6 o'clock limbus will allow it to drain off. Very rarely, saline irrigations may be needed to remove a clot.

The hemorrhage may be from an iris blood vessel and continue. For this, place the patient in a more erect position. The various coagulants, calcium, vitamins C, K and E have all been recommended. Even these hemorrhages usually clear in time but occasionally a black hematoma may remain and a very dense membrane with blood staining of the cornea can occur. In such cases, the visual results are poor.

Expulsive hemorrhage of the choroid has occurred as late as five days after operation, but we know of no way of preventing its occurrence and when it happens, the eye is hopeless and should be enucleated.

Eversion of the cornea may occur when no sutures are used or after very severe vomiting.

In event of such an accident, a large superior conjunctival flap should be prepared, the wound opened on both sides to a point about 1mm. below the horizontal line marking the lowest point of normal cornea and the flap pulled down and sutured to the conjunctiva opposite 4 and 8 o'clock. This procedure was described by me in 1937[2].

For rupture of the wound which usually occurs about the fifth day, a similar conjunctival flap should be used, but the wound need not be opened as far down as in case of a corneal eversion.

Prolapsed iris should be snipped off and covered with a conjunctival flap. We do not use chemical cautery. We have seen severe corneal opacities and secondary glaucoma arise after such cautery.

Shallow anterior chamber after cataract operations may be due to detachment of the choroid or seepage from an imperfectly closed wound. In either case, the condition will usually return to normal within two weeks. Rarely it requires more time.

Secondary glaucoma may occur early. If it is due to swollen cortex in the anterior chamber, a keratome incision at the 6 o'clock limbus usually permits the cortex to escape without irrigation. In rare instances saline irrigations are necessary.

When the glaucoma occurs several weeks or months after operation, a cyclodialysis is indicated if the condition is not controlled by miotics. Miotics, particularly Carcholine can reduce the tension even in cases with complete iridectomy. When a cyclodialysis is done if the iris pillars are adherent to the cornea or the healed incision, they should be freed before the iris angle is opened. If attempted after the spatula is swept through a quadrant to open the iris angle, the hemorrhage will obscure the pillars and freeing them is difficult or impossible.

We are in no hurry to remove the sutures. Any conjunctival sutures are removed when they come loose or at the end of ten days if they do not. Any cornea-scleral sutures are permitted to remain until the wound is firmly healed and there is little danger of rupturing the wound if the patient looks up suddenly while the tip of the scissors is under a loop. It is even safer to cut the suture from above and not permit the blade of the scissors to get under a loop of the suture. In fact, a suture covered by conjunctiva and producing no irritation need not be removed.

Iritis may complicate cataract operations. When mild, irritative, only atropine is necessary. If severe, the usual treatment for any iritis should be used. If typhoid vaccine is used, 150 to 250 million is given at the first injection and subsequent dosage depends on the reaction and results. Rarely a vitreous abscess or a ring abscess of the cornea is seen. This is usually an exogenous infection. Typhoid vaccine and the biologicals in large doses should be given, but the prognosis is very poor.

With the extra capsular extractions, phaco anaphylaxis is occasionally seen. Lens antigen and foreign protein are used usually with very poor results.

Secondary cataracts from lens capsule, cortex and hemorrhage are seen in almost 50% of extra capsular extractions. Needling should not be attempted until the eye is pale, rarely less than six weeks after the lens extraction. When doing a needling, the aim should be to make a clear 2 to 3mm. opening, not to remove all the capsule. That is adequate for normal vision even if it may not give a perfect anatomical result.

If the secondary cataract is too dense to needle, a corneal incision and removal of a central portion with a scissors must be done. Vitreous will usually be lost, but this need not impair the visual result.

If the lower iris is pulled up to the superior limbus, a new pupil must be made. This is a very simple procedure. A horizontal incision of 5mm. should be made just below the level of the corneal vertex. The traction will usually open up a round hole in the iris. Very little hemorrhage occurs from this procedure.

Retinal detachment may occur at any time after a cataract extraction. If seen and operated on early enough, the results in our experience are as good as in any other type of retinal detachment. The micro-coagulation with diathermy is the operation of choice.

We have seen as late complications of cataract surgery:

1. — Central vein thrombosis three weeks after an intracapsular extraction with 20/30 vision at time of discharge from the hospital.

2. — Optic neuritis with subsequent optic atrophy in a diabetic — six months after operation.

3. — Diabetic Retinitis in several patients whose retinae were normal immediately after operation.

4. — Hypertensive neuro retinopathy in several cases.

Anything can happen to eye after a cataract operation that can happen to a healthy eye, but it is discouraging after a successful operation to see these late complications.

We are often asked, how serious is loss of vitreous in a cataract operation.

We have seen as much as 1/3 of the healthy vitreous lost and the eye have 20/25 vision as long as twelve years later.

We have never seen vitreous abscess or exogenous infection occur in eyes with vitreous loss.

With loss of vitreous, as with intracapsular extraction, the eye remains pale for four or five days and the injection usually seen on the second or third day after extracapsular operation does not occur until later.

We do not believe that retinal detachments occur any more frequently in cases with vitreous loss than in those without.

We have never seen choroidal detachment in cases with loss of vitreous.

We do not like to lose vitreous in our cataract cases, but we believe that such a loss is no calamity.

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DISCUSSION

Dr. Hallard Beard, Chicago: Dr. Bothman really leaves very little to be said on the subject of complications to the cataract operation. My remarks therefore may be taken by way of emphasis. I can personally bear witness to nearly all the untoward developments described by the essayist as occurring in consequence of cataract operations, and I was particularly struck by his reference to a diabetic retinopathy which appeared after a successful operation had revealed a normal fundus oculi. To convince a patient of one's innocence in such a matter makes considerable demand upon his credulity as well as upon one's own power of expression.

One not infrequent complication I should like to dwell upon for a moment; that is, late prolapse of the iris. This annoying affair develops rather slowly and occasionally reaches enormous proportions, appearing as a great bluish, nodular excresence on the eyeball in the region of the incision. It is caused by imperfect union of the lips of the wound, between which the iris interposes itself. The iris is not a firm tissue, but is plastic, like rubber, and when acted upon by the internal pressure of the eye, it stretches to become a balloon-like hernia. The repair of this constitutes no small operation in itself, yet it must not be neglected as it always causes an intolerable astigmatism and is liable to rupture upon the least traumatism.

The two most tragic complications to the cataract operation, or indeed, to any penetrating operation on the eyeball, are expulsive choroidal hemorrhage and and sympathetic ophthalmia. Both, I am thankful to say, are quite rare, since the surgeon is powerless in either event. Sympathetic ophthalmia is particularly malignant in that it destroys not only the operated eye but also its fellow. Such a tragedy makes an indelible impression on the mind of the surgeon. Perhaps it would be best for one of these dread accidents to happen — if, indeed, they must happen at all — in the experience of the young ophthalmologist who is just receiving his training, in his residency, for example, when his responsibility may be shared by his senior on the service. He is then more likely to approach major eye surgery with the wholesome respect it deserves.

Dr. Max Kulvin, Chicago: I would like to ask Dr. Bothman if he has experienced epithelial downgrowth following cataract extraction and what if anything does he do about it.

Dr. H. F. Ford, Champaign: I recently had the privilege of attending a meeting of the New York Academy of Ophthalmology, at which a paper was presented by a Hopkins man advocating a somewhat more shallow incision to lessen the danger of anterior chamber hemorrhage. From statistics presented, the Kirby peripheric incision, with very little conjunctival flap, lends itself admirably to the theory proposed. If you have a deep incision you are much more apt to have hemorrhage also. I have come to the conviction that the corneoscleral stitch should be left to slough out or at least be left several weeks.

Dr. Louis Bothman, Chicago: In answer to the last question, trichloracetic acid is recommended only for a small prolapse; those are the cases I referred to when I said I saw severe corneal opacities result.

In regard to epithelium in growth from the cornea; that condition occurs once in awhile. We once attempted to remove it without success and since then have used x-ray in treatment. However, the results are not good. Diathermy has been used with one good result. A case like that is very likely to be lost from secondary glaucoma. Eventually the epithelium completely lines the anterior chamber, so the results are very poor. I might tell you of a case I saw recently, not due to corneal epithelium growing into the wound, but to a piece of iris which dropped into the lower anterior chamber at the time of iridectomy. A small piece remained in the anterior chamber and I did not see it. Later it was visible in the lower angle at 6:00 o'clock, and from that a very thin membrane grew and completely covered the cornea, lining the chamber angle. We used x-ray on that case. The eye is quiet and soft, but there is only light perception. I have never run across such a case in the literature. I think it is very unusual that iris tissue should proliferate in this manner.

It is true that the ideal corneal section should be made at the corner where no vessels are encountered and further, to do extraction for a round pupil without iridectomy. Such a procedure would eliminate the danger of hemorrhage or sympathetic ophthalmia.

IMMUNIZATION PROCEDURES

JEROME J. SIEVERS, M.D., M.S.P.H.
Chief, Division of Communicable Diseases
Illinois Department of Public Health
SPRINGFIELD

The production of active immunity by artificial immunization is still one of the most important methods for the control of communicable diseases.

Faced with the problem of the waning of previously acquired immunity, particularly in adults, and consequently by the absence of immunity in newborns, health officers and physicians are being forced to reconsider the schedules of immunization which they formerly employed. It has become necessary to find antigens which will produce immunity in the very young, and also to find antigens which can be used in adults without causing severe reactions. This has been done to some extent, but the brightest part of the picture has been the growing evidence of the efficacy of combined antigens, which is resulting in a decrease in the number of injections required in a full immunization schedule. The purpose of this discussion is to outline briefly the present status of those immunization procedures which are effective against diseases currently present in Illinois.

SMALLPOX

From the standpoint of current morbidity and mortality, smallpox is probably the least important disease with which we have to deal. However, when one considers the possible implications of any lapse in the immunity status of the general population, smallpox becomes very important. Recent experiences in England and on the West Coast of the United States and now in New York, have shown again the rapidity with which smallpox can spread among an unimmunized, or a poorly immunized population group. Smallpox is still prevalent in many areas of the world and the efficiency of present day methods of travel, particularly by air, means that travelers can be back in Illinois within a day or two after having been exposed to smallpox in another country. It was even possible for soldiers, who had been exposed in Japan and Korea, to reach this country by ship before showing any of the signs or symptoms of the disease. It is necessary, therefore, to maintain a high rate of immunization in this country as long as smallpox is occurring anywhere in the world.

The occurrence of smallpox in U. S. troops, supposedly vaccinated against the disease, raised some questions as to whether or not the smallpox vaccine in use was protective against the strains of smallpox endemic in the Orient. After investigation, it was concluded that the vaccine was protective, and that the cases occurred in individuals incorrectly assumed to have shown "a reaction of immunity" following vaccination.

Localized outbreaks of smallpox in England caused by returning air travelers showed again that smallpox can occur among the vaccinated and re-opened the question of the duration of immunity conferred by the primary vaccination. Furthermore, it was demonstrated that vaccination performed in the incubation period is not necessarily protective, as it is possible for a perfect "take" to develop simultaneously with the disease.

Frequent re-vaccinations are necessary to maintain immunity. It is equally important that the vaccination be performed correctly, using a potent vaccine, and that the result of the procedure be read by someone experienced in the interpretation of the reactions following vaccination.

Primary vaccination should be done in the first year of life and may be done as early as one month of age. The period between 3 and 6 months is probably the best. Nothing less than yearly re-vaccination can be considered safe, and at the most, the interval should not exceed three years.

DIPHTHERIA

The decline in diphtheria morbidity and mortality, which has taken place over the years, has probably not been entirely due to artificial immunization. Accompanying this decline there has been a simultaneous decline in the number of diphtheria carriers. There has resulted, therefore, a decrease in the frequency of naturally acquired stimuli to immunity, and a consequent decrease in the general level of immunity in certain sections of the population. Repeated Schick test surveys have shown that 50 to 60% of young adults are susceptible to diphtheria, in contrast to an incidence of 20 to 25% of positive reactions formerly reported in these age groups. The last

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few years have seen a definite shift of the incidence of the disease into older age groups. In addition, it has been shown that an increasing number of women are entering pregnancy without immunity to diphtheria. It is no longer possible to assume that infants are immune to diphtheria during the early months of life, as a consequence of passively acquired immunity from the mother.

It is also important to note that as a result of the reduced prevalence of diphtheria bacilli, artificially induced immunity is not as lasting as it once was. The chance contacts with cases and carriers are no longer available to stimulate immunity. The public health significance of this situation is important, for we must not only concern ourselves with the immunization of a wider age group, but also must face the necessity of maintaining immunity once it has been established. We must consider the desirability of beginning primary immunization at an earlier age, the more frequent use of stimulating injections of antigen, and the extension of immunization to older age groups.

In children the problem is relatively simple. The use of two doses of 1 cc. each of alum-precipitated diphtheria toxoid at intervals of at least 4 weeks is still the procedure of choice. The only question is whether it is safe to postpone immunization beyond six months of age. If the mother's Schick test is positive, either the mother should be immunized in the last trimester of pregnancy, or the infant should be immunized at an early age, even though it may be necessary to re-immunize later. Under no condition is it wise to postpone the beginning of diphtheria immunization beyond the sixth month. Diphtheria immunization may be satisfactorily combined with pertussis vaccine, tetanus toxoid, or both. A stimulating or booster dose is indicated at the time of entrance to school, or earlier if the child attends a nursery school or has school age siblings.

In adults the problem is not so clear. Both alum-precipitated toxoid and fluid toxoid are likely to cause severe reactions in adolescents and adults when given in the usual dose. Obviously, with our presently available antigens, we are not yet ready to advise the mass immunization of all adults. The further development of some of the materials still in the experimental stage, such as protamine toxoid, may at some future date lead to a change in this thinking. It is also necessary to consider that we may have been using excessively large doses of toxoid. In England doses of alum precipitated toxoid as small as 0.1 to 0.3 cc have apparently been effective. Unpublished studies in one of the state hospitals in Illinois showed that doses of ¼, ¼ and ½ cc. of fluid toxoid produced a satisfactory percentage of reversal of the Schick test in adults six months after immunization. It may be possible to achieve satisfactory immunization of adults with much smaller doses of toxoid than have been commonly used.

At the present it is desirable to perform the Moloney test in adults in whom immunization is indicated, using 0.1 cc. of diluted toxoid, and to administer divided or diluted doses of toxoid to those who show a positive Moloney reaction. The usual initial dose of fluid toxoid is 0.1 cc. and this may be substituted for the Moloney test. If no reaction follows, the immunization can then proceed with an increased dose.

PERTUSSIS

Although it does not completely protect all children against whooping cough, the development of pertussis vaccine has progressed to the point where there are no grounds for omitting the protection afforded for any infant or young child. The greatest disadvantage of pertussis vaccine, that it was not effective in the early months of life when protection was most needed, has apparently been overcome by the development of the alum-precipitated vaccine, which is capable of producing immunity even when begun as early as the first month of life. The point made in the discussion of diphtheria, that it may be well to consider the immunization of the mother during pregnancy, is also applicable to pertussis and for the same reasons. There still exists the doubt that immunization during the early months of life may not persist. This, however, can be solved easily by the use of a combined diphtheria-pertussis combination at about 6-7 months of age. Thus the child given 3 doses of 1 cc. of pertussis vaccine during the first few months of life can receive a stimulating dose at the time diphtheria toxoid is given without any increase in the number of injections required. A stimulating dose of pertussis vaccine, either alone or in combination with diphtheria toxoid,

is indicated at the time of entrance to school, or even earlier, if the child is sent to a nursery school, or has school age siblings.

In passing, it should be mentioned that evidence is accumulating that in pertussis agglutinogen we may have the long-sought for simple test for pertussis immunity. This material, however, has not yet been released for general distribution.

Immunization against pertussis, therefore, may be begun as early as one month of age and in no case should be delayed beyond the 7th month. It may be given alone, or in combination with diphtheria toxoid, tetanus toxoid, or both.

TETANUS

The effectiveness of tetanus toxoid was satisfactorily demonstrated during the recent war. It would seem a waste to allow to lapse, the immunity produced in some 10,000,000 Americans by the injections of tetanus toxoid while in service. As the duration of immunity is not definitely established, booster doses should be given to these veterans at intervals of several years, and perhaps oftener to those engaged in occupations where the danger of tetanus is great. Certainly, booster doses should be given at the time of injury to any of those previously immunized.

Because children usually play close to the soil, there is a hazard of contamination with tetanus spores in any of their injuries received out of doors. It is added protection, therefore, to include tetanus toxoid with diphtheria toxoid when the latter is given during the first year, or to administer it singly during the second or third year. A booster dose is suggested one or two years after the original immunization and at the time of any injury subject to contamination with tetanus spores.

It is also strongly recommended that active immunization with tetanus toxoid be started about three weeks following any administration of tetanus antitoxin. Should another injury then occur, the use of tetanus antitoxin will not have to be considered and the risk of anaphylactic reaction will have been obviated.

Although this discussion has heretofore been confined to active immunization, at this point I wish to include a plea for the use of larger prophylactic doses of tetanus antitoxin. I heartily agree with Spaeth that 1500 units is not sufficient and recommend that at least 5,000 units be employed. The Illinois Department of Public Health will shortly begin to furnish that size package instead of the 1,500 unit size.

SCARLET FEVER

We do not recommend the use of scarlet fever toxin as a mass immunization procedure in the general population. Although many have reported a smaller incidence of scarlet fever in immunized groups, as compared to control groups, we still feel that the toxin immunizes only against the erythrogenic phase of the disease and not against bacterial invasion. In addition, the severity of the reactions encountered from the Dick antigen and the frequency of injections are such as to discourage its use in view of the relative mildness of scarlet fever today.

There are, however, certain population groups such as nurses and residents of children's institutions, where the risk of scarlet fever is great. In such groups it is perhaps desirable to immunize for whatever degree of protection may be afforded. Likewise, the private physician may have patients in whom the need of some added protection, however little, is desirable. It is quite justified to seek a reversal of the Dick test in such instances. The use of tannic acid precipitated scarlet fever toxin given intracutaneously in three doses of 0.1 cc. each of graduated strength is relatively free of reactions and produces a satisfactory percentage of Dick test reversals in most children and in many adults. In the latter group it is generally advised that four doses be given instead of the usual three.

TYPHOID FEVER

The efficacy of typhoid vaccination has been well established. The occasional reports of typhoid fever in the immunized are not suprising for no immunization procedure gives an absolute degree of protection. It is important to remember, however, that typhoid fever among the vaccinated is usually atypical, and some reports indicate a relatively high incidence of complications in such cases — probably as a result of the difficulty and the consequent delay in establishing the diagnosis.

Typhoid immunization is indicated where, because of occupation or local sanitary conditions, the risk of exposure is great. Of all the occupational groups, nurses and laboratory workers are most exposed. Those, whose occupations or travels

take them into areas where the water supply is not known to be from an approved source, should be immunized. Institutional populations, especially in mental hospitals where personal hygiene is poor, also require this protection.

The severity of the reactions encountered from typhoid vaccine remains the greatest drawback to this procedure. The percentage of reactions is still fairly high and unquestionably was increased when the bacterial content of the vaccine was increased from 500 million organisms per cc. to 1000 million.

The addition of Para A and Para B organisms also increases the number of reactions. Because of the low incidence of these two infections in Illinois, we do not recommend the general use of the triple vaccine. It is available for the use of physicians when so desired, however.

A boon to those individuals requiring a constant level of protective immunity has been provided by the evidence that a single annual booster dose of ½ cc. subcutaneously, or 0.1 cc. intracutaneously, following the initial series of three injections, will serve to keep the antibody level sufficiently high. To maintain a high level of immunity, the booster dose should be given annually as mentioned, but individuals given a single booster dose of antigen at even longer intervals often show an immunity response superior to that afforded by the original complete course.

The standard course of typhoid immunization is still ½, ½ and 1 cc., subcutaneously at intervals of 7 to 10 days. Experience with other types of immunization suggests that a longer interval between doses would probably enhance the immunity afforded.

INFLUENZA

Much has been written and said regarding influenza virus vaccine during the past few years. There is little doubt that the use of combined A and B influenza virus vaccine provides a significant degree of protection against the clinical types of influenza for which these organisms are responsible. The disease as currently seen is relatively mild and the desirability of widespread immunization is still unsettled. As we learn more about the cycles of influenza and increase our ability to forecast epidemics of the disease, the question may be answered for us by the public, who will request whatever protection is afforded. Certainly during the past winter season, industry in general thought it advantageous to offer influenza vaccine to employees. It will probably continue to be used extensively among those living or working in closely organized groups.

ROCKY MOUNTAIN SPOTTED FEVER

Since the recognition in 1934 of the first case of Rocky Mt. spotted fever in Illinois, a total of 200 cases of the disease have been reported from 74 of the State's 102 counties, with a case-fatality rate of about 15%. In 1946 Illinois experienced its highest incidence, as 41 cases were reported. The wide distribution of the disease throughout the State indicates that the common wood-ticks of Illinois are infected with the Rickettsia rickettsi. It may be well, therefore, for all persons, who, because of residence or occupation, are exposed to the bite of of ticks, to consider the use of Rocky Mt. spotted fever vaccine. If intended to be used, it should be given in the spring. The protection does not last beyond a year and the injections must be repeated annually.

SUMMARY

As a result of the decline over the years in the incidence of many communicable diseases, those occasional contacts with various organisms which served to produce natural immunity or to reinforce artificial immunity, have lessened markedly. In order to prevent the development of a highly susceptible population, it has become necessary to (1) extend immunization to a wider age group, beginning earlier in infancy and extending more into adolescence and adulthood, and (2) to use "booster doses" and revaccination more frequently.

The development of antigens which will produce immunity in the very young and of antigens which will not cause severe reactions in older individuals, is proceeding.

The use of various combinations of diphtheria toxoid, tetanus toxoid and pertussis vaccine is justified.

DISCUSSION

Dr. Edward A. Piszczek, Chicago: Regarding the re-vaccination period, we have been advising re-vaccination every 5 to 7 years. Dr. Sievers recommends a three year period and I would like him to elaborate on that a little further.

Dr. Jerome J. Sievers, Springfield, Illinois: I don't have any figures to prove that three years is better

than one year, five or seven. Nothing less than yearly re-vaccinations can be considered safe. We picked three years as the most practical from our standpoint.

Dr. Edward A. Piszczek, Chicago: In New York recently there was a report of a case of smallpox brought in from Mexico which had an 11-day incubation period. The smallpox we encounter in this area has an incubation period of 12 to 16 days, even 19 days, so probably the period of vaccination protection would depend upon the virulence of the strain. If virulent, we would vaccinate every 6 months, or with the common strain prevalent, probably 5 to 7 years.

Dr. Jerome J. Sievers, Springfield, Illinois: It almost goes without saying, that in the presence of an epidemic, everybody should be vaccinated regardless of any schedule.

Dr. Winston H. Tucker, Commissioner of Health, Evanston, Illinois. We all know that the fatality rate from pertussis is highest in children under six months of age. Several investigators have already shown that the morbidity and mortality rates from pertussis can be markedly reduced in infants when pertussis vaccine is first administered as early as one month of age. Dr. L. W. Sauer and I have been working on pertussis immunization in young infants during the past year, and, at the present time, we administer the first dose of pertussis vaccine when the child is three months of age. An alum precipitated mixture of pertussis vaccine and diphtheria toxoid is used for this purpose, but because small children do not develop antibodies readily, four doses of 0.5 cc of the mixed antigen are administered at three, four, five and six months of age. In addition, we are now routinely injecting stimulating doses of 0.5 cc of the same mixed antigens when the child enters a day nursery at two or three years of age, and again at five years of age, just prior to entrance to school.

Dr. Sandor Horwitz, East Peoria, Illinois: The Public Health Department advocates five-year revaccination periods for smallpox. From my personal experience—I have been through several epidemics of smallpox, the last one while Health Commissioner of Peoria, 1929-30, covering 200 cases—I am strongly of the opinion that if vaccination is done in early life, preferably during the first year of life, immunity is more or less perpetual.

Checking up on cases during epidemics, with the exception of one adult, I did not find a single case that showed signs of a previous successful vaccination. This one adult had been successfully vaccinated just a year before he came down with smallpox.

Therefore, early vaccination, in my opinion, may be considered a means of perpetual immunity against smallpox.

SKIN COMPLAINTS OFTEN FIRST SIGNS OF UNDERLYING MENTAL DISEASE

Certain skin complaints often are among the first signs of an underlying mental disease, according to two Chicago doctors, Theodore Cornbleet, M.D., and Meyer Brown, M.D., from the Department of Dermatology of the University of Illinois College of Medicine and the Department of Nervous and Mental Diseases of Northwestern University Medical School.

Writing in the January 17 issue of *The Journal of the American Medical Association*, the writers observe that disturbed sensations of the skin which cannot be traced to any rational source should always be suspected. Some of the most common of these are intense itching which develops suddenly, a feeling of numbness, tingling, burning, drawing, heat or cold, a sensation of insects crawling or of droplets falling on the skin.

An actual skin disorder may sometimes be accounted for by excessive washing or cleansing of the skin which springs from a delusional idea, the doctors point out. Unreasonable concern over the appearance of some simple condition such as a few additional facial hairs or moles or increased dryness or oiliness of the skin, as well as complete indifference to serious skin disease, also may indicate that a psychiatrist's services are needed. Excessive sweating, feelings of warmth, blanching or flushing or blushing may or may not be part of a set of psychiatric symptoms. More obvious are bizarre delusions involving the skin and self-induced injuries.

BUTTER, MARGARINE SHOWN TO HAVE EQUAL NUTRITIONAL VALUE

2-Year Experiment Reveals No Difference In Health Between Children Fed Butter And Others Fed Margarine

A two-year study of 267 children reveals no difference between butter and margarine fortified with vitamin A so far as their effects on growth and health are concerned, according to a study from the Department of Pediatrics, University of Illinois College of Medicine, Chicago, which is reported in the February 7 issue of *The Journal of the American Medical Association.* The investigators who made the study are Harry Leichenger, M.D., George Eisenberg, M.D., and Anton J. Carlson, M.D., Ph.D.

"Two groups of children were included in the study, which covered a period of two years," they write. "One group received only margarine as the table fat in the diet. It was used on bread and vegetables, as well as in the making of pastry and in frying. Fortified margarine was supplied by a number of the various companies now manufacturing the product and was the same as that sold to the public. The margarine used was all derived from vegetable fats, and contained no fat from animal sources. The second group of children used only butter for the same purposes.

"The margarine group lived in an institution housing 130 children ranging in age from three to 16 years. The children were half-orphans, for the most part from broken homes. They attended the nighborhood schools and returned to the institution for lunch. Samplings also indicated that the children were served margarine on their occasional visits to families outside the institution.

"The butter group was in another institution some 10 miles away. It included 125 children ranging in age from six to 17 years, who were mostly orphans.

"The diet in each institution was carefully supervised by trained dietitians and so regulated that 25 to 30 per cent of the total calories were supplied by fat. The margarine constituted approximately 65 to 70 per cent of the total fat calories.

"All of the children in both groups were weighed and measured each month under medical supervision. A careful check was made from time to time to be sure that weights and measurements were accurately determined. Routine red blood cell counts and hemoglobin determinations were made on each child after the study was started and again one year later. Specialists in pediatrics supervised the medical care of all the children. A record was kept of the character and duration of all illnesses contracted by the children.

"All those records of children who were studied less than six months were discarded. About 40 in each group were so eliminated, leaving 160 records in the margarine group and 107 in the butter group.

"Growth of the group fed margarine, as determined by increases in height and weight, was comparable to that of the children fed butter and to standard height and weight values for the same age group.

"Furthermore, it was noted that in the margarine group there was no increase in the amount of illness. Illnesses in general had been on the decline in the margarine group for the last four or five years, and this decrease in the incidence of illness continued during the period of the study. This compares with conditions present in the community for the last five years.

"It was interesting to observe how the children accepted margarine. When it first made its appearance on the table—in its white form—and the study was explained to the children, the younger children promptly accepted it. The children in the older age group did not take to it too kindly. Very shortly thereafter, however, a shipment of colored margarine came in. This was cut up into the usual pats and all the children then ate it readily and liberally. Thereafter it was always served cut in pats and colored.

"At no time during the period of the study was it considered that vitamin A played any definite role in the results of the study. The reason, of course, is that all the margarine used contained 15,000 units of vitamin A per pound—which is equal to or greater than the amount present in average butter.

"Blood studies showed that there were no significant differences between the margarine or butter groups.

"The children in the margarine group experienced a high degree of good health during the study, and in comparing their health to that of the butter group it appears to have been much better.

"When infirmary records are compared it is readily seen that the margarine group fared much better than the butter group. We are not making any claims that the margarine group were healthier simply because their diet contained margarine. Other variables are more likely to account for their better health.

"At no time during the course of the study did either institution experience any type of epidemic, and no doubt this may in part be due to the fact that both institutions practiced accepted preventive measures on all their children."

Case Reports

TYPHUS FEVER IN ILLINOIS

SANFORD A. FRANZBLAU, M.D., AND
HUSHANG JAVID, M.D.
CHICAGO

Athough typhus is rare in Illinois, we must be alert to the possibility of rickettsial infections. Recent reports of new rickettsial diseases[1, 2], the increased scope and speed of our travels, and the frequency with which we are confronted by obscure syndromes make this report timely.

Since we now have, in para-aminobenzoic acid (PABA), a drug proved to be effective against rickettsiae[4, 5, 6], it is incumbent upon us to arrive at an early diagnosis. A glance at the accompanying table will emphasize the low incidence of recognized cases in this state.

CASES OF ENDEMIC TYPHUS*

Year	In U.S.A.	In Illinois	In Other Northern East Central States
1946	3,366	0	Ohio 2 Indiana 1 Michigan 2
1945	5,180	1	Ohio 6
1944	5,353	0	Ohio 5 Indiana 1 Michigan 1
1943	4,517	1	Indiana 1 Wisconsin 1
1942	3,725	0	Michigan 3 Ohio 1
1941	2,780	1	Ohio 2 Michigan 2 Wisconsin 1
1940	1,879	0	Ohio 2 Indiana 1 Wisconsin 1

*Values obtained from Public Health Reports of the U.S. Public Health Service.

From the medical service of the Research and Educational Hospital of the University of Illinois, 1819 West Polk Street, Chicago, Illinois.

Case No. 109769: This 60 year old white woman worked as a helper in a hospital supply room. She became ill on January 25, 1947, with extreme weakness, severe headache and a fever of 102°F. These, the cardinal symptoms of onset of most rickettsial diseases, persisted and became more severe. She was seen by a physician on February 3rd when sulfadiazine and bicarbonate of soda were prescribed. No rash was noted up to this time by either the physician or members of the family.

She was admitted to the medical service of the Research and Educational Hospital on the 12th day of her illness in a stupor from which she could not be aroused. The temperature was 104° F., pulse 100, respiration 24 and blood pressure 115/50. Over the trunk, arms and thighs was a typical typhus rash which was recognized as such by one of us (H.J.) who had received his medical training in the near East where typhus is fairly common. The rash was composed of light red, discrete maculo-papular zones from one to four millimeters in diameter without any crusts or vesicles. It bore a resemblance to a measles rash except that the face was spared. The tongue was parched and the pharynx was dry and beefy red in color. There was evidence on examination of the chest of fluid in the right base and right lower lobe pneumonia, both of which were confirmed by x-ray findings (Figure 1). The spleen was not enlarged. The ocular fundi were normal. The pupils were round, small and equal and reacted to light. The neck and leg Brudzinski as well as the Kernig sign, were all normal. The urinary bladder was distended and required catheterization.

The patient was given infusions of physiolog-

ical saline solution and glucose to combat the dehyration and because of the presence of bronchopneumonia was given 50,000 units of penicillin intramuscularly every two hours. By the next day many small petchial hemorrhages were noted in the rash, but the patient had improved to the point where she was able to respond to questions. On the third hospital day (the fourteenth day of illness) her blood pressure was 90/45 and the pulse was thready and irregular. An electrocardiogram showed frequent auricular premature systoles. The fever which ran up to 103°F. for the first four hospital days (Figure 2) gradually subsided to normal in the next four days. Except for some slight pleuritic pains in the right chest accompanied by a fever of one degree late in the convalescence, the patient made an uneventful recovery. Although a diagnosis of typhus fever purely on clinical grounds had been considered as early as the second hospital day, it was not until the thirteenth hospital day that definite proof in the form of laboratory tests was forthcoming. By this time the patient was well on the way to recovery and therapy with PABA no longer was indicated.

Laboratory data: The hemograms are tabulated below:

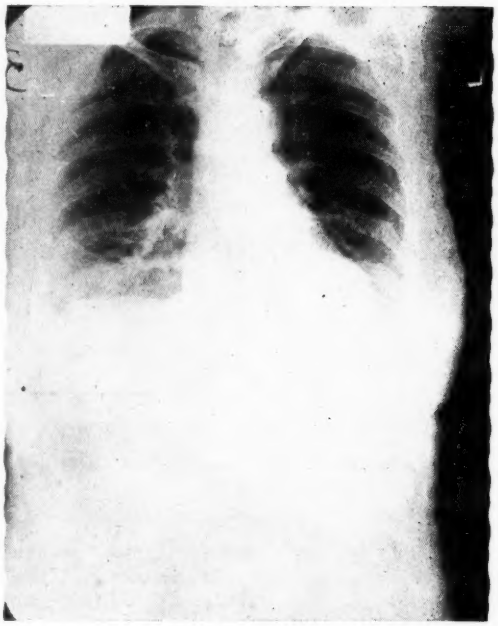

Figure 1

Cultures of urine and stool were negative. Blood cultures taken on the day of admission and incubated aerobically, anaerobically and in 10% CO_2 were likewise negative. This is in keeping with the fact that thus far rickettsiae have been grown only in living tissues. Guinea pig inoculations with patient's blood were performed on the second hospital day, but the characteristic fever and scrotal swelling produced in these animals by rickettsiae did not occur. Such a result was not surprising since this was already the thirteenth day of illness. Agglutinations for typhoid and paratyphoid were negative on several occasions. Agglutinations with Proteus OX-19 (the Weil-Felix reaction) in significant titer, (i.e. greater than 1:80), first appeared on the twenty-fourth day of illness, but a finding of definite diagnostic value, namely, a rise in titer from 1:40 to 1:80 occurred between the thirteen and eighteenth days of illness (Figure

Date	Day of Illness	RBC (Millions)	WBC (Thousands)	Differential in Percent					Hb (Gm %)
				Neutros	Lymphs	Monos	Eosins	Basos	
2-5-47	12		17.5	72	25	3	0	0	12.0
2-6-47	13	3.1	16.0	78	17	4	0	0	12.5
2-21-47	28		8.2	53	36	8	1	1	
2-26-47	33	3.0	5.2	48	41	11	0	0	
3-6-47	41	3.1	4.7	33	67	1	0	0	12.2

Platelets were adequate throughout. Blood chemistries on admission showed an NPN of 42 mgm %; whole blood chlorides were 73 m.e. l. (426 mgm % as NaCl); the HCO_3 ion content was 34.6 m.e. l. (77 vol. % CO_2 combining power); the serum albumin was 3.7 gm %; and the globulin 3.5 gm %. One month later the NPN was 37 mgm %; the creatinine 2.0 mgm %; the HCO_3 ion 27.9 m.e. l. (62 vol. %); the serum albumin was 4.8 gm %; and the globulin 2.6 gm %. Blood sulfadiazine on the day after admission was 14 mgm %. A spinal fluid examination was performed on the fifteenth day of illness and showed a slightly elevated pressure with normal dynamics, normal cell count, proteins, glucose, chlorides, Wasserman reaction and colloidal gold curve.

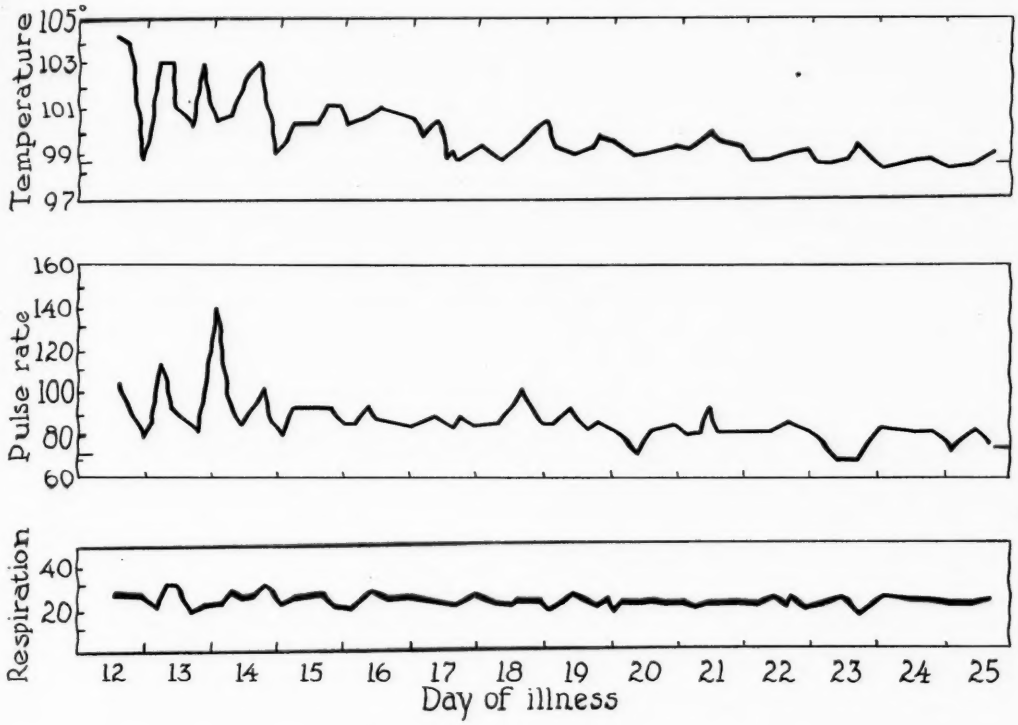

Figure 2

3). Agglutinations with Proteus OX-2 and OX-K, which are positive in Rocky Mountain spotted fever and scrub typhus respectively, were negative on several occasions. Specimens of patient's serum collected under sterile precautions on the fortieth day of illness and submitted to the National Institute of Health, Washington 12, D.C. for complement fixation tests with the various rickettsiae showed the following results:

"Q" Fever)
Rickettsialpox) Negative
Rocky Mountain Spotted Fever)
Endemic Typhus Fever) Positive 1:512

Follow-up x-rays of the chest showed clearing of the pulmonary lesion and disappearance of the pleural fluid.

Comment: Awareness of the possibilities is fifty percent of the diagnostic armamentarium.

Despite careful questioning of the patient, friends and relatives, no clues could be elicited regarding any possible source of the infection. The patient could not recall being bitten by any flea, louse, tick or mite, and on admission there

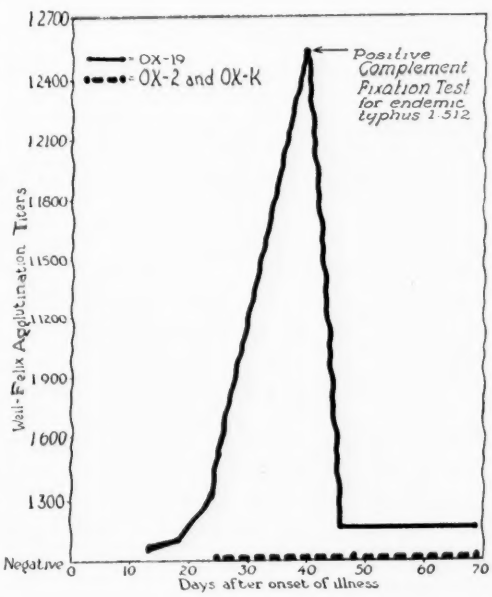

Figure 3

were no evidences of arthropod infestation in either the clothing or on the body.

Of some interest is the fact that in 1943 Brigham and Pickens (7) demonstrated that the common house mouse is one of the reservoirs of endemic typhus. Of further interest is the fact that this patient's residence is only three city blocks from the Chicago stock yards. To quote from an editorial on typhus in the July 1946 Annals of Internal Medicine (3), "Originally limited largely to the coastal cities, it has gradually spread Northward. It promises to become widespread in this country wherever rats abound."

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GLOMUS TUMORS

SAMUEL PERLOW, M.D.
AND HAROLD A. ROTH, M.D.
CHICAGO

Glomus tumors may be the cause of severe localized pain in an extremity or digit. They are abnormal, benign enlargements of the glomus bodies which are located in the subpapillary layer of the nailbeds, the tips of the fingers and toes, the palmar and plantar surfaces of the hands and feet, and occasionally in other parts of the body.

The normal glomus was first described by Suquet[1] in 1862 and shortly afterwards by Hoyer[2]. But it was not until Masson's report in 1924 and the more recent excellent studies of Popoff[4] in 1934 that the histologic picture of the glomus was clearly understood. Essentially the typical glomus consists of an afferent artery, an arteriovenous anastamosing vessel which is a direct continuation of the artery, and a peripheral encircling collecting vein. The anastamosing vessel is known as the Suquet-Hoyer canal. It is tortuous and often coiled in the shape of the letter S and has a narrow lumen and a thick endothelial and muscular wall. It is surrounded by a plexus of non-medullated nerve fibers and by numerous preglomic arterioles which arise from the afferent artery proximal to the anastamosing vessel to supply the constituents of the glomus. The whole body is surrounded by an indefinite layer of fibrous tissue.

Popoff[4] found that in the normal adult there were between 10 and 24 glomus bodies per square centimeter of surface area in the big toe and thumb. It is believed that the contraction and dilatation of the anastamosing vessel is under the control of the local and general vasomotor mechanism and that the function of the glomus is to regulate the local arterial and venous pressures and the local skin temperature.

In 1924 Masson[3] was the first to describe a tumor of the glomus. Since then the condition has become known widely and numerous case reports have appeared. In 1941 Beaton and Davis[5] reported 3 cases of their own and collected 271 cases from the literature. The glomus tumor is a benign enlargement of the normal glomus. On section it seems to be almost entirely composed of tortuous dilated blood vessels surrounded by non-medullated nerve fibers. In the walls of the anastamosing artery the smooth muscle is partially replaced by large pale "glomus" cells of the epitheloid type with clear or vacuolated cytoplasm. Numerous nerve endings are present between these cells.

Trauma is believed to be one of the causative factors in the development of the tumor. They vary in size from 2mm. to 3 or 4 cm. in diameter, and usually appear singly, although multiple tumors have been found in other parts of the extremities.[6] The outstanding symptom is exquisite tenderness in the involved area. Extreme changes in the temperature locally may initiate a paroxysm of pain.

When the subungual region is involved there may be a visible deformity of the nail and ero-

From the Dept. of Surgery, Michael Reese Hospital, Chicago, Ill.

sion of the phalanx as seen on roentgen examination. In other parts there may be no evidence of the tumor except for a minute bluish area in the overlying skin. Elevation of the skin temperature at the site of the tumor has been reported. Pinpoint pressure directly over the tumor produces the severe pain of which the patient complains in all cases. This is the most significant diagnostic sign. As a rule the diagnosis is not difficult if the examiner will bear in mind the possibility of a glomus tumor as a cause for local excruciating pain in an otherwise normal appearing skin.

The unusual locations of the glomus tumors in our cases prompted this report.

CASE REPORT

J.R., male, 39 years old, complained of severe local pain in the left suprascapular region of 8 years duration. At times the pain radiated up to the head and neck and down the left arm. The slightest pressure in that region would produce the pain and occasionally he would be awakened by a stabbing pain in that area which would last from a few minutes to one half hour. His condition had been variously diagnosed from arthritis and neuritis to neurosis and he had even been given psychiatric care without relief.

On examination a 1 mm. bluish area was found in the skin 1 cm. above the middle of the left scapular spine. Pinpoint pressure over this area and for about 2 mm. around it reproduced the pain. There was no visible or palable tumor. The local skin temperature was normal both before and after the pain started. Infiltration of the area with 2cc. of 1% procaine completely abolished the tenderness and the referred pain. General examination of the patient including blood count and urinalysis was essentially negative.

A tentative diagnosis of glomus tumor was made and the involved skin was excised under local anesthesia. An 8 mm. soft, purplish, spherical tumor was found attached to the skin at the point of bluish discoloration. (Figure 1) Miscroscopic examination revealed a typical glomus tumor. The patient has been free from pain since the operation.

CASE REPORT

L.L., Male, 50 years old, complained of a painful bluish nodule over the right knee of 12 years duration. The pain was brought on by the slightest pressure over the area and was excruciating.

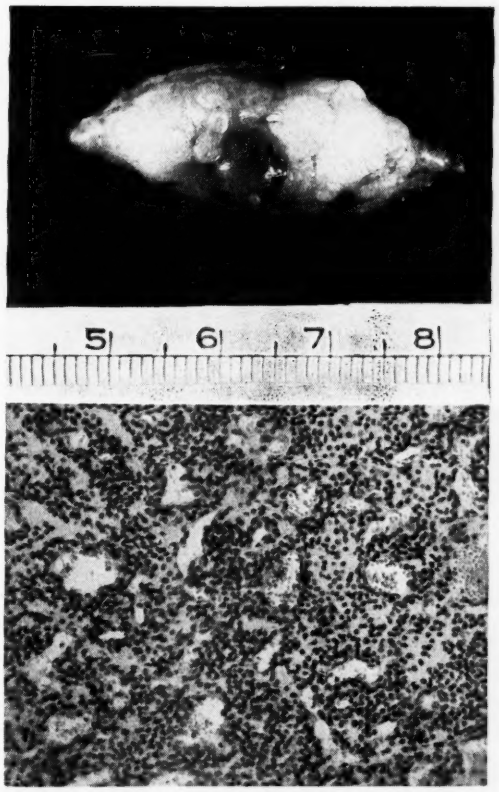

Figure 1. (Top) Gross appearance of glomus tumor, and (Bottom) a. photomicrograph. H. & E. stain x160, showing marked vascularization and "glomus" cells.

On examination a bluish area 8 mm in diameter was found in the skin medial and just below the right patella. It was slightly raised and was 1.2°C. warmer than the surrounding skin. A firm nodule of the size of the bluish area was palpated just below the skin. It was extremely painful. Infiltration of the area with 2 cc of 1% procaine relieved the pain. General examination of the patient was essentially negative.

A clinical diagnosis of glomus tumor was made. The involved area was excised under local anesthesia. A 12 mm, purplish, soft, well defined spherical tumor was found attached to the skin at the point of bluish discoloration. Microscopic examination revealed a typical

glomus tumor. The patient has been free from pain since the operation.

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ARMY MEDICAL DEPARTMENT OFFERS ADVANCED TRAINING

1. The U. S. Army Medical Department announces the availability of opportunities for advanced training and experience in the various special fields of medicine and surgery in overseas Army hospitals. These hospitals are registered with the American Medical Association, and this training may be acceptable by the specialty board as part of the period usually required to be spent in limited practice and experience prior to admission for examination. Interested members of the medical profession who have completed the formal training requirements for certification in one of the special fields are eligible to apply for these positions. On 1 January 1948 the following opportunities were available, and will be open until filled:

Specialty	*No. of Openings*
Eye, Ear, Nose & Throat	7
Obstetrics & Gynecology	14
Anesthesia	7
Ophthalmology	3
Otorhinolaryngology	3
Neurosurgery	1
Orthopedic Surgery	5
Thoracic Surgery	1
Plastic Surgery	1
Radiology	11
Internal Medicine	24
Dermatology	3
Neuropsychiatry	15
Pediatrics	10
Cardiology	2
Pathology	1

(There are also 21 positions in general surgery and 5 positions in urology, but these boards specify "supervised practice" and it has not yet been determined whether or not the hospitals will be approved by these boards. However, full approval of these specialties is being sought and inquiries are invited.)

Positions offered will be in the following hospitals:

Name	*Location*	*Bed Capacity*
97th General Hospital	Frankfurt, Germany	1000
98th General Hospital	Munich, Germany	1000
110th Station Hospital	Vienna, Austria	150
120th Station Hospital	Beyreuth, Germany	325
124th Station Hospital	Linz, Austria	150
130th Station Hospital	Heidelberg, Germany	250
250th Station Hospital	Regensburg, Germany	150
279th Station Hospital	Berlin,Germany	350
317th Station Hospital	Wersbaden, Germany	150
319th Station Hospital	Bremerhaven, Germany	600
385th Station Hospital	Nurnberg, Germany	350
387th Station Hospital	Stuttgart, Germany	453
388th Station Hospital	Giessen, Germany	250

These locations provide excellent facilities and equipment, a wealth of clinical material and the services of visiting consultants who are outstanding specialists in the various fields of medical practice. In addition, opportunities will be afforded to observe the work of notable scientists and physicians in German and Austrian Universities.

2. The applicant may avail himself of this training for periods of one, two or three years. Those applicants who are selected, and who hold reserve commissions in the Medical Corps, will usually be recalled to active duty in the highest grade attained prior to release from previous active service. Those who do not hold such reserve commissions will be tendered a reserve commission in the Medical Corps in keeping with their age, years of professional experience and prior service in any branch of the Armed Forces. Prior military service is not required. Individuals who are members of the U. S. Naval Reserve must transfer to the Army Reserve before being called to active duty. Families of married applicants will be allowed to accompany them to the place of duty. Suitable quarters are available. Families of individuals who do not declare their desire to serve for periods to exceed one year cannot be transported at Government expense.

3. Eligible physicians are invited to communicate with The Surgeon General, U. S. Army, Washington 25, D. C., for further information. Inquiries should include the following information:

a. Name
b. Address
c. Age
d. Nationality
e. Marital status
f. Dependents with age of each
g. Medical school and graduation date
h. Internship and date
i. Details of graduate training
j. Specialty and geographic location desired
k. Contemplated length of service
l. Details of prior military service

News of the State

PERSONALS · COMING EVENTS · MARRIAGES · DEATHS

CHAMPAIGN COUNTY

Society Election.—Dr. William H. Schowengerdt was chosen president of Champaign County Medical Society at its recent meeting, succeeding Dr. Willard L. Veirs. Other officers are Dr. C. H. Drenckhahn, vice president and Dr. J. J. Westra, secretary-treasurer. Dr. Earl Wise asked that his name be withdrawn as delegate to the Illinois State Medical Society and Dr. T. G. Knappenberger was chosen in his place. Dr. R. H. Smith is alternate delegate to the State Society. Dr. Glen R. Ingram is adviser for medical defense. The board of censors include Dr. Isidore Brill, chairman; Dr. John B. Christie and Dr. James B. Gillespie; executive committee, Dr. Arnold Leavitt and Dr. B. Smith Hopkins, Jr.

CHRISTIAN COUNTY

Society News.—Dr. A. R. Eveloff of the Springfield Clinic discussed "Methemoglobinemia in Infants" before the Christian County Medical Society in Taylorville, January 13, and Dr. E. Harold Ennis, also of the Springfield Clinic, "Office Gynecology."

CLINTON COUNTY

Fifty Years of Service.—Dr. J. A. Bauer, Germantown, was honored December 28 when St. Boniface Parish and the Chamber of Commerce of Germantown combined to celebrate his fifty years of service. At the evening banquet, the speakers included Dr. R. D. Roane, and Dr. J. Q. Roane, both of Carlyle, president and secretary-treasurer respectively of the Clinton County Medical Society.

COOK COUNTY

Personal.—Dr. Philip Thorek, Chicago, presented a paper on "Carcinoma of the Large Bowel" with motion picture demonstration before the Fort Wayne Medical Society, Fort Wayne, on January 6.—Olaf Bergeim, Ph.D., noted for research studies on chemical changes which occur in the stomach, has been promoted to the rank of professor of biological chemistry at the Chicago Professional Colleges, University of Illinois.—Dr. Albertine L. Rea, psychiatrist at the Chicago State Hospital, has retired, effective December 31. She held the position since 1920.

Organization of the Cerebral Cortex.—Dr. Percival Bailey, professor of neurology and neurological surgery, University of Illinois College of Medicine, will deliver the twenty-fourth Ludvig Hektoen Lecture of the Frank Billings Foundation, Institute of Medicine of Chicago, at the Palmer House, Friday evening, March 26. His subject will be "Organization of the Cerebral Cortex."

Research Awards Established.—The Borden Company Foundation, Inc., has contributed $2,500 to the University of Illinois for the establishment of research awards in medicine.

The gifts will be officially known as the Borden Undergraduate Research Awards in Medicine. They will be administered under the direction of Dr. John B. Youmans, dean of the college of medicine. An award of $500 will be made each year over a period of not less than five years.

All students in the graduating class of the college of medicine who have carried out undergraduate research in the medical field will be eligible for the award. It will be presented at the time of the recipient's graduation.

The Borden Company has stipulated that originality and thoroughness of research will be of primary consideration. The research must be "the most meritorious performed by all similarly eligible persons."

Chicago Physicians on Medical Mission.—Three Chicago Physicians returned early in February from a three week stay in Puerto Rico as participants in a medical mission sponsored by the United States Department of Interior. The Chicago physicians were Dr. Ernest E. Irons, Dr. John B. Youmans, and Dr. H. N. Sanford, all physicians associated with the University of Illinois College of Medicine. The purpose of the mission was to investigate the medical services now available for the indigent in Puerto Rico, and to submit recommendations for the improvement of those services. The Virgin

Islands were also visited. Eight physicians participated in the mission, which was managed by the American Medical Association. Dr. Youmans, in addition to participating in the mission, conducted experiments on tropical spruce in Puerto Rico.

Warren Cole Goes to England.—Dr. Warren H. Cole, head of the department of surgery at the University of Illinois, has been appointed Senior Scientist Attache to the United States Mission to Britain for Science and Technology. The mission will be conducted under the jurisdiction of the U. S. Department of State.

Dr. Cole left Chicago on Sunday February 8, to report in Washington, D. C., prior to sailing for England. He will serve with the mission for approximately three months as the representative in surgery.

The mission is designed to establish liaison with British scientists in various fields, including medicine, engineering, and chemistry. The representatives in medicine will visit numerous British clinics.

Dr. Cole has served as professor and head of the department of surgery at the University of Illinois since 1936. He previously was associated with Washington University at St. Louis, Mo.

Dr. Cole has held the office of president of the Society of University Surgeons and the Chicago Surgical Society. He has contributed more than 100 articles to medical literature, and has, in collaboration, written three books.

The Lewis Linn McArthur Lecture.—The twenty-fourth Lewis Linn McArthur lecture of the Frank Billings Foundation was delivered at the Palmer House, Friday evening, February 27, by Dr. Alfred Blalock, professor of surgery, The Johns Hopkins University School of Medicine, Baltimore, on "The Surgical Treatment of Congenital Cardiovascular Defects."

Isaac Abt Honored.—Northwestern University Medical School held a reception December 18 to honor Dr. Isaac A. Abt on the occasion of his eightieth birthday. Dr. Abt, who is professor emeritus of children's diseases in the medical school, was one of the first physicians in the nation to train for and practice in the field of pediatrics. Dr. Abt recognized and treated successfully the first case of infantile scurvy ever reported in the Chicago area. It was also Dr. Abt who administered the first dose of diphtheria antitoxin ever given in Chicago. It was he, too, who made the first incubators for premature babies, long before the modern devices were designed. Somewhat later, he planned the first electrically-operated breast pump. One of the prime movers in the organization of the Infant Welfare Society, Dr. Abt is also noted for the victorious battle he fought for pure milk for infants.

Born in Wilmington, Ill., in 1867, Dr. Abt moved to Chicago in 1875. He was educated in the city's public schools, and studied for a year at the University of Chicago before entering Johns Hopkins University for a pre-medical course. He returned to Chicago in 1889 to study for a medical degree at Northwestern University Medical School, then known as the Chicago Medical College. After he graduated in 1891, he served a two-year interneship at Michael Reese Hospital, and subsequently spent eighteen months in postgraduate study in Vienna, Berlin, and other European medical capitals.

Dr. Abt served as professor of diseases of children at the Women's Medical School at Northwestern from 1897 until the school disbanded as a separate institution in 1901. Later he was associate professor of children's diseases at Rush Medical College. He was recalled to the Northwestern faculty as professor of pediatrics in 1909. He officially retired, with the rank of professor emeritus of children's diseases in 1939.

The Isaac A. Abt Pediatric Foundation at Northwestern, to which funds in excess of $100,000 have been contributed by the physician's friends in his honor, furthers pediatrics research in the medical school and finances a fellowship in the field of children's diseases.

Emanuel Senn Provides for Hospital in Will.—A hospital will be established in Milwaukee and named after Dr. Nicholas Senn, according to a provision in the will of the late Dr. Emanuel Senn. He died December 14. His estate is left in trust to his widow, Alice. After her death, it will be used to establish the hospital.

Non-Technical Exhibit on Cancer.—A scientific but non-technical exhibit on cancer, designed for the purpose of educating the general public, has been planned by the Illustration Studios at the Chicago Professional Colleges of the University of Illinois.

The comprehensive exhibit will be developed at the request of the American Cancer Society. It is expected to be completed in approximately two years, and will be installed at the Museum of Science and Industry, 57th and Lake Michigan, Chicago. The exhibit will be created in the Illustration Studios.

Designed for lay consumption, the exhibit will further the growing public education program now being undertaken on a large scale for the American Cancer Society. The display is expected to cover the question "What is Cancer?" the cause of cancer, misconceptions regarding cancer, methods by which cancer spreads, methods of treatment, early diagnosis, cancer research, and current events.

The exhibit will be developed along entirely new lines, and will occupy a space approximately 60 feet by 40 feet at the Museum of Science and Industry. As a feature of the exhibit, one section will be devoted to a cancer information center where current information will be made available, and where discussion groups can meet and films can be shown.

The Illustration Studios completed an exhibit last summer, entitled "The Miracle of Growth." The exhibit, portraying the growth and development

of an individual from conception through adulthood, is on display at the Museum of Science and Industry.

Changes in Municipal Tuberculosis Sanitarium.—Recent resignations from the staff of the Municipal Tuberculosis Sanitarium, Chicago, include Dr. Leo M. Czaja, for twelve years general superintendent; Dr. Camillo E. Volini, for fourteen years superintendent of the clinics; Dr. Richard Davison, for fifteen years chief chest surgeon; and Dr. John Brosnan, a staff physician for seven years. Dr. Volini and Dr. Davison will continue as dispensary physicians. Dr. A. A. Friedman, for twenty-five years a dispensary physician at the sanitarium, succeeds Dr. Volini. Dr. John Michael Dorsey, professor of thoracic surgery, University of Illinois College of Medicine, succeeds Dr. Davison, and Dr. Hiram A. Langston, member of the staff of Northwestern University Medical School, will alternate with Dr. Dorsey.

University Lectures.—Dr. Andrew C. Ivy discussed "Physiology, Medicine, and Religion" at an assembly hour at the University of Illinois College of Medicine, February 4. Mr. J. Christian Bay, librarian emeritus, John Crerar Library, lectured on "The Students' Approach to Medical Literature" February 11.

Officers Named for Tuberculosis Advisers.—Dr. Morris Fishbein, Editor of The Journal of the American Medical Association, Chicago, was elected chairman of the board of physicians who were recently named by Mayor Kennelly to serve as medical advisers to the Municipal Tuberculosis Sanitarium. Dr. James H. Hutton, Chicago, was chosen secretary. Other members of the board are Drs. Robert G. Block, N. C. Gilbert, Henry L. Schmitz, Jerome Head, Josiah J. Moore, and Edward Levine.

Building Purchased to House Nutrition Institute.—Northwestern University has announced its purchase of the nine story Dunham building at 450 E. Ohio St. for its newly established Institute of Human Nutrition. The institute will specialize in research education and service involving nutrition, the *Chicago Tribune* reported.

Purchase of the building was made possible by an advance gift of $10,000 from Eugene Kettering, of the Electro-Motive division of the General Motors corporation. A drive for $1,000,000 to complete the purchase and to provide operating funds for nutritional research is now under way.

Dr. Tom D. Spies, world known nutrition authority, will direct the institute.

Report of Outpatient Visits.—More than 140,000 visits were made to the 22 outpatient clinics at the University of Illinois hospitals during the past year.

Official figures released by Dr. Myron C. Benford, assistant medical director, show a total of 140,424 visits for 1947. Patients who were treated for the first time numbered 10,684.

Two clinics, medicine and allergy, each handled more than 12,000 visits. The dermatology clinic ranked third with 10,581 visits.

An additional 6,500 patients received bed treatment last year at the University of Illinois hospitals. Hospital care and clinic treatment is limited to residents of Illinois whose cases are of educational and research interest, and who are referred by their attending physicians. Financial inability to provide for specialized medical services is a deciding factor in the selection of patients.

The hospitals have been forced to reject the applications of more than 100 clinic and bed patients daily because of inadequate facilities. Service facilities are used to full capacity, and most departments maintain hospital waiting lists.

Appointments at the Hektoen Institute.—At the annual meeting of the board of trustees of the Hektoen Institute for Medical Research, held on Dec. 22, 1947 at the University Club, the following appointments were made: Dr. John B. O'Donoghue, professor of surgery, Loyola University School of Medicine; Dr. Frederick H. Falls, chairman of the department of obstetrics and gynecology, University of Illinois College of Medicine, and Mr. Irv Kupcinet, as members of the board. Drs. Morris T. Friedell, Louis P. River, Oak Park, and Donald D. Kozoll, Evanston, were appointed as research associates, and Dr. William S. Hoffman as director of biochemistry according to J.A.M.A.

Dr. Armstrong Appointed to Presbyterian Hospital Staff.—Dr. S. Howard Armstrong Jr., Boston, has been appointed full time chairman of the department of medicine at Presbyterian Hospital, and will have charge of the department's educational and research work. He succeeds Dr. Ralph C. Brown as head of the department of medicine, heretofore an honorary position carrying no remuneration. Dr. Brown, having reached the retirement age, resigned June 1, 1947 and is now on the consulting attending staff. The hospital is enlarging its research activities by setting up a laboratory of medicine, which will be equipped early this year under Dr. Armstrong's direction, in buildings formerly occupied by Rush Medical College. Laboratories of pathology and biochemistry were established previously. Dr. Armstrong is a graduate of Harvard University Medical School, Boston, 1937, and has devoted the last seven years to graduate study of internal medicine at Harvard and the Massachusetts Institute of Technology.

Dr. Gradle Awarded Medal for Prevention of Blindness.—The first Pan American Medal of the National Society for the Prevention of Blindness in the United States was awarded January 10 to Dr. Harry S. Gradle, for many years a leading ophthalmologist in Chicago. Dr. Gradle is now retired and living in California. The award was made in Havana, Cuba, during the third Pan American Congress of Ophthalmology, of which Dr. Gradle was the founder and first president. Dr. Baudilio Courtis, Buenos Aires, Argentina, made the presentation to

Dr. Gradle in absentia; he was unable to be present because of ill health. The citation read: "For scientific contributions to knowledge about causes of blindness and impaired vision, for outstanding service in advancing education in ophthalmology, for distinguished leadership in founding the Pan American Association of Ophthalmology."

Dr. Gradle graduated from the Rush Medical College in 1906. He served as attending and later senior attending ophthalmic surgeon to Michael Reese Hospital, Chicago, and for several years he was chief of staff at the Illinois Eye and Ear Infirmary. He was active in many scientific societies and held a professorship at the University of Illinois College of Medicine.

Growth of Medical Library.—The Quine Library of Medical Sciences at the Chicago Professional Colleges of the University of Illinois now ranks as one of the largest university medical libraries in the nation with a total of 84,910 volumes.

Miss Wilma Troxel, medical librarian, reports that the Quine library has increased in size by approximately 34,000 volumes during the past decade. The library is now receiving 923 current journals.

The library's present rate of growth is over 4,000 volumes annually. Temporary relief for the acute shortage of shelving space in the library has been provided by the installation of additional book stacks containing room for 12,000 volumes.

A special effort has been made to fill in files of foreign periodicals for the war years. With the exception of German journals, nearly complete sets of most of the foreign titles which continued publication during the war have been received. In addition, about 300 volumes of French, German, and Italian medical works have come in through the Library of Congress cooperative project for the acquisition of wartime publications.

DE WITT COUNTY

Society Election.—Dr. Keith Rhea was reelected president of the De Witt County Medical Society for 1948 at the regular monthly meeting, December 10. Other officers are Dr. W. J. Nowlin, Farmer City, vice president, and Dr. W. R. Marshall, Clinton, secretary-treasurer. Dr. H. L. Meltzer, Clinton, was elected delegate to the Annual Meeting of the Illinois State Medical Society, and Dr. H. J. Schrag was elected alternate delegate. Dr. Schrag was also elected to the board of censors.

DOUGLAS COUNTY

New Officers.—Dr. C. K. Ross, Newman, was chosen president of the Douglas County Medical Society at its annual meeting December 18. Other officers are Doctors Edmund Kahan, Hindsboro, vice president, and J. O. Cletcher, Tuscola, secretary-treasurer. Dr. Irving H. Neece, Decatur, President of the Illinois State Medcal Society, gave the principal address discussing "Diseases of the Kidney."

DU PAGE COUNTY

Society Election.—Dr. E. H. Kupke, Naperville, was chosen president of the Du Page County Medical Society at its meeting in the new auditorium of the Memorial Hospital, Elmhurst, December 17, 1947. Other officers are Dr. T. R. Marquardt, Lombard, vice president, and Dr. A. R. Rikli, Naperville, secretary. Dr. Nathan Davis discussed geriatrics.

Hospital News.—A new $750,000 addition to the former Elmhurst Hospital is being opened early this year. There will be approximately 225 beds available to the physicians of Du Page County. A new pediatric department as well as a department of physical medicine has been opened, according to Dr. Martin F. Heidgen, director.

GREENE COUNTY

Society Changes.—Dr. F. Earl Walker, Roodhouse, was chosen president of the Greene County Medical Society, succeeding Dr. R. W. Paper, at a meeting of the society on December 12. Other officers chosen are Dr. Paul A. Daley, Carrollton, vice president; Dr. W. H. Garrison, White Hall, secretary-treasurer; and Dr. N. J. Bucklin, Roodhouse, censor. Dr. Ellsworth Black, guest speaker at the meeting, gave a very instructive lecture on "Peptic Ulcer."

LEE COUNTY

Hospital News.—Dr. Bruce D. Hart has resigned as a member of the staff of the Dixon State Hospital concluding twenty years of service there. He has accepted a new assignment at the Arizona State Hospital at Phoenix.—Dr. Elizabeth McDonnel has resigned as staff physician at the Dixon State Hospital. Dr. McDonnell has retired to her home in Oak Park, Illinois.

MADISON COUNTY

Personal.—Dr. Gordon F. Moore, Alton, has been certified by the American Board of Surgery.

PEORIA COUNTY

Society News.—Dr. Andrew C. Ivy, vice president in charge of the Chicago Professional Colleges, University of Illinois College of Medicine, addressed the Peoria County Medical Society, January 20, on "Role of Nazi Physicians in Concentration Camp Atrocities."

ROCK ISLAND

Society News.—Dr. Harold Swanberg, Quincy, discussed "Carcinoma of the Uterus" before the Rock Island County Medical Society at its meeting on January 13 at the Moline Public Hospital, Moline.

SALINE COUNTY

New Officers.—Dr. B. E. Montgomery, Harrisburg, was recently elected president of the Saline County Medical Society. Other officers are Drs. D. A. Lehman, Harrisburg, vice president; W. J. Blackard, Jr., Harrisburg, Secretary-Treasurer. Dr. Montgomery was chosen delegate to the Illinois State Medical Society and Dr. N. A. Thompson, Eldorado, alternate.

WHITESIDE COUNTY

Business Meeting.—Dr. Neil Marquis, Sterling, was chosen president of the Whiteside County Medical Society, succeeding Dr. I. Vandermyde, Morrison. Other officers are Dr. L. C. Johnson, Tampico, vice president and Dr. Glenn Pohley, Rock Falls, secretary-treasurer. Dr. H. L. Pettitt, Morrison, was elected legislative chairman. Dr. Raphael Isaacs, attending physician in hematology at Michael Reese Hospital, Chicago, was the principal speaker.

Society News.—Dr. Frederick Slobe, industrial physician of Chicago, addressed the Lee-Whiteside County Medical Society, January 12 at the Sterling Public Hospital, Sterling. Dr. Slobe's subject was "Trends in Occupational Health."

GENERAL

Regional Heart Meetings.—The first regional conference of the Illinois Heart Association was held on February 11. This meeting was conducted in Rockford. The second meeting was held in Springfield, March 4 and the third one will be sponsored in East St. Louis, April 1. These three conferences were designed to meet the needs of the medical profession and are held in conjunction with the county medical society in each area.

Former Chicagoan Awarded Practitioner's Medal.—Dr. Archer C. Sudan, formerly a member of the staff of University of Chicago School of Medicine, was named "Family Doctor of the Year" by the American Medical Association, receiving the General Practitioner gold medal and certificate awarded for exceptional service. Dr. Sudan graduated at Rush Medical College in 1926, becoming a member of the teaching staff at the University of Chicago the same year. Again in the same year, he went to Kremmling, Colorado, a mountain village of 567 inhabitants "to do a little fishing" and remained there for general practice.

903 New Doctors Licensed in State.—During 1947 the state department of registration and education issued 903 new licenses to physicians and surgeons, according to Frank G. Thompson, department director. The highest number of new licenses ever granted in a single year was 1082 in 1946.

Last year 549 physicians and surgeons left Illinois for other states, 214 of them removing to California.

HEALTH DEPARTMENT ACTIVITIES

Save the Teeth Campaign.—Designed to offset an ever increasing prevalence of dental defects among school children, a new kind of "save the teeth" campaign was to be launched soon in Illinois, according to an announcement January 8, by Dr. Roland R. Cross, state director of public health.

Along with regular brushing of the teeth, the new program will focus attention on three factors which are among the most effective known means of preventing dental decay: application of sodium fluoride to the teeth; use of a new dentrifice containing di-basic ammonium phosphate and urea; and a reduction of sugar and sweets in the diet of children. The program was approved at a recent meeting of representatives of all local dental societies of Illinois, all dental colleges in the state, and the Illinois department of public health.

"Studies made by a number of investigators indicate that all three factors to be emphasized in the program are effective in the control of dental caries," Dr. Cross stated. He pointed out that sodium fluoride applied to the teeth has been shown to reduce caries by about 40 per cent. "A special demonstration among approximately 3,000 school children in the use of the new dentifrice is already under way in Aurora and Peoria," Dr. Cross said, "and a demonstration in the use of sodium fluoride will be started in a specially selected area as soon as practicable."

In emphasizing the need for the new dental program in the state, Dr. Cross cited studies showing that the prevalence of dental defects among school children increased 26 per cent from 1926 to 1946 despite the fact that all other physical defects among these same children showed a reduction of 32 per cent during the 20-year period.

"In 1946 examinations of more than 600,000 school children revealed 436 dental defects per 1,000 children, as against a rate of 344 per 1,000 children in 1926," Dr. Cross said. "All other physical defects in the same children declined from 561 per 1,000 in 1926 to 382 in 1946."

Report on Birth Rate.—For the second successive year the Illinois birth rate has reached a new high. Dr. Roland R. Cross, state director of public health, recently said that 191,866 live births were registered in Illinois during 1947 with a corresponding rate of 23.3 births for each 1,000 inhabitants.

Dr. Cross said that there has been a great boom in births throughout the entire United States ever since the fall of 1946. Because of this, Illinois will very likely still be among the states with lowest birth rates, just as in 1946, when it ranked 45th. The boom has been gradually receding since the October 1946, high point. The outlook for 1948 is a continued recession in the birth rates.

The most significant health note in the 1947 record, according to Dr. Cross, is that the gains in saving the lives of young babies have been preserved in spite of the heavy load on hospitals and the practicing physicians. The 1947 infant death rate of 28.4 deaths among babies under one year old for every 1,000 births is a new milestone in the battle to save life in that dangerous first year. Premature birth is still the most frequent cause of death among babies and four out of every five babies who die in the first year of life die in the first month.

Although the figures on maternal deaths are still incomplete, Dr. Cross is confident that the high birth rate will be accompanied by an unusually low maternal mortality . Indications are that only about 12 mothers will have died from maternal causes for every 10,000 babies born alive.

The 92,230 deaths in the state in 1947 account for

a general death rate of 11.2 deaths per 1,000 population.

"While this is higher than the 1946 death rate of 10.8, the increase is not alarming", Dr. Cross stated. "Greater mortality from heart disease accounts for almost all of the net increase. Increasing mortality from heart disease is evidence of the fact that our population is aging and that greater efforts in the prevention and management of heart disease offer the only hope of preventing a steady rise in the general death rate."

The principal vital statistics rates for 1947 are:

	State	Chicago	Downstate
Live births per 1,000 population	23.3	23.1	23.5
Deaths per 1,000 population	11.2	10.9	11.4
Infant deaths per 1,000 live births	28.4	27.2	29.4
Stillbirths per 1,000 live births	18.9	19.9	18.1

"For The Common Good"

"Help Your Public Health Nurse Help Your Community" is the theme of the 1948 observance of Public Health Nursing Week throughout the nation, April 11-17. The First District of the Illinois State Nurses Association, covering Cook, Lake and DuPage counties, was charged with launching the organization to develop a suitable program in its area. Miss Ann Fox, Chicago, Secretary, Educational Committee, Illinois State Medical Society, was elected general chairman, and Miss Margery MacLachlan, Chicago Council on Community Nursing, secretary. Chairmen of organization committees include Miss Yvonne Ramsey, Billings Hospital, Chicago, Press Committee; Mrs. Ingeborg Uhlmann, Oak Park Schools, Radio Committee; Mrs. Elizabeth Newton and Mrs. Madeline Roessler, Cook County School of Nursing and Cook County Department of Public Health, respectively, co-chairmen of Open House and Schools of Nursing; Mrs. Gladys Moulton and Mrs. W. E. Heim, Chicago, district chairmen of the PTA, co-chairmen of the Club Committee; Mrs. Roberta Baker, Chicago, health educator, Institute of Tuberculosis of Chicago and Cook County, Exhibit Committee, and Mrs. Thelma Cline, R. N., Cook County Department of Public Health, Speakers Bureau.

Members of the respective committee include representatives of all health and allied agencies in Cook, Lake and DuPage counties.

Visitors in the Chicago office of the Illinois State Medical Society recently were Dr. A. V. Friedrichs, and Mr. Frank Lais Jr., chairman and executive director, Council on Medical Service and Public Relations, respectively, of the Louisiana State Medical Society. Both are of New Orleans. One hundred each of "Doctors and Horses" and "The Doctor and His Medical Society" went back to New Orleans with the visitors.

Mr. Don Taylor, new public relations director of the Iowa State Medical Society, visited the Chicago Office, requesting specific information on procedure to develop speakers programs for lay groups. He also asked to spend a day in the office "to see how the wheels go 'round." This was done March 2.

Other executive officers who have requested specific information concerning the activities of the Educational Committee included Mr. Tom Walsh of the Medical Society of the State of New York and Mr. Dick Graham of the Oklahoma State Medical Association.

Mrs. Edna Spittler, developing new speakers program in the Bureau of Health Education, American Medical Association, spent two hours in the Chicago office studying procedure of arranging speaking engagements.

"The Doctor and His Medical Society," exhibit of the society, concluded the round of medical schools in Chicago with an extended visit to Northwestern University Medical School when Dr. Alexander Day called to prolong the exhibit for one week because of the interest of the senior students.

The exhibit is scheduled for the annual meeting of the Illinois Congress of Parents and Teachers in Peoria in April.

Conference Arranged Under the Auspices of the Postgraduate Education Committee of the Illinois State Medical Society: Dr. Robert S. Berghoff, Chicago, Chairman:

Tenth Councilor District in Murphysboro, March 11 (St. Clair, Monroe, Washington, Randolph, Perry, Jackson, Union, Alexander and Pulaski Counties); Jackson County Medical Society acting as host.

S. Glidden Baldwin, M.D., Danville, Eye Conditions Seen by the General Practitioner.

Edwin M. Miller, M.D., Chicago, Bowel Obstruction in Infants and Children.

Leo K. Campbell, M.D., Chicago, Diabetes.

William B. Serbin, M.D., Chicago, Appendicitis in Pregnancy.

Bernard E. Malstrom, M.D., Galesburg, Critical Study of 1,240 Consecutive Cases of Sodium Pentothal Anesthesia with New Method and Technic.

Alfred D. Biggs, M.D., Chicago, Intestinal Obstruction of the Newborn.

Percy E. Hopkins, M.D., and James H. Hutton, M.D., Chicago, Illinois Prepayment Medical Care Plan and Medical Public Relations, respectively.

Justin J. Cordonnier, M.D., St. Louis, The Medical and Surgical Management of Renal and Ureteral Calculi.

Julius Jensen, M.D., St. Louis, Electrocardiography.

Lectures Arranged Through the Scientific Service Committee of the Illinois State Medical Society: Dr. Robert S. Berghoff, Chicago, Chairman:

Dr. Alex J. Arieff, Chicago, Rockford Memorial Hospital School of Nursing, in Rockford, February 3, "Psychosomatic Medicine."

Dr. Henry Buxbaum, Chicago, Kankakee County Medical Society in Kankakee, February 10, on "Prolonged Labor."

Dr. John W. Huffman, Chicago, La Salle County Medical Society in La Salle, February 12, "Diagnosis and Treatment of Early Carcinoma of the Cervix."

Dr. Kenneth Penhale, Chicago, McDonough County Medical Society in Macomb, February 27, on "Traumatic Injuries of the Face."

Dr. Samuel H. Kraines, Chicago, Will-Grundy County Medical Society in Joliet, April 8, on "Psychosomatic Medicine."

Dr. James W. Sours, Peoria, Logan County Medical Society in Lincoln, April 15, on "Diabetes."

Dr. Harvey S. Allen, Chicago, Will-Grundy County Medical Society in Joliet, April 22, on "Burns."

Lectures Arranged Through the Educational Committee of the Illinois State Medical Society; Dr. Charles P. Blair, Monmouth, Chairman:

Dr. Frederick H. Falls, Chicago, American Lady Corset Company in Chicago, January 26, "Anatomical Structure of the Feminine Body."

Dr. Percy E. Hopkins, Chicago, Women's Civic Federation in Peoria, January 28, "Compulsory Health Insurance and the Illinois Medical Prepayment Plan."

Dr. Paul Starcevich, Chicago, Woman's Auxiliary to Will-Grundy County Medical Society in Joliet, February 10, "Acute Conditions of the Abdomen."

Dr. Harry H. Boyle, Chicago, A. E. Burnside School P.T.A. in Chicago, February 10, "Health of the Growing Child."

Dr. Robert R. Mustell, Chicago, Norwegian Lutheran Children's Home, February 15, "The Parent's Responsibility to Society."

Dr. Warren W. Furey, Chicago, Woman's Auxiliary to the Peoria Medical Society in Peoria, February 17, "Ten Point Program of the American Medical Association."

Dr. Marie Wessels, Chicago, Norwegian Lutheran Children's Home in Chicago, February 29, "Problems of Parenthood: Emotional Adjustment."

Dr. Harlan English, Danville, Lions Club, Gibson City, February 24, "Compulsory Health Insurance."

Dr. Robert R. Mustell, Chicago, Nathaniel Pope P.T.A. in Chicago, April 6, "Child Health Problems."

Dr. Bertha M. Shafer, Chicago, Glen Ellyn Jr. High School P.T.A. in Glen Ellyn, April 12, "What Parents Should Teach Their Children of Sex."

A film "When Bobby Goes to School" (Mead Johnson and Company), Hawthorne school P.T.A. in Chicago, April 13.

Drs. Edwin Hirsch, Franklin Fitch and Bertha Shafer, North Central College (Y.W.C.A. and Y.M.C.A.) in Naperville, April 14, "Sex: Premarital and Marital Aspects."

Dr. Harry H. Boyle, Chicago, Mason School P.T.A. in Chicago, April 20, "Rheumatic Fever."

Dr. Alfred D. Biggs, Chicago, Mason School P.T.A. in Chicago, April 20, "Rheumatic Fever."

Dr. Peter T. Gray, Sterling, Mendota Woman's Club in Mendota, May 3, "Superstitions About Health."

MARRIAGES

JOHN M. LANGSTAFF, Fairbury, Ill., to Miss Ruth A. Ford of Chatsworth, October 6, 1947.

DEATHS

CHARLES D. ALLISON, Gardner, who graduated at the Medical College of Indiana, Indianapolis, in 1896, died January 16, aged 76. He had practiced medicine over fifty years.

LOUIS FERDINAND ALRUTZ, Chicago, who graduated at the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904, died Nov. 26, 1947, aged 71, of coronary thrombosis. He had served on the staff of West Suburban Hospital, Oak Park.

GARNELL BAILEY, Evanston, who graduated at Meharry Medical College, Nashville, in 1931, died in the Evanston Community Hospital recently, aged 44, of hypertension.

JAMES GLEN BEATTIE, retired, Evansville, who graduated at the Barnes Medical College, St. Louis, Missouri, in 1898, died January 14, aged 82.

LUCIUS B. DONKLE, Chicago, who graduated at University of Illinois College of Medicine in 1903, died January 7, aged 70. He was senior surgeon at St. Bernard's Hospital for many years.

JOHN CASIMER DUBIEL, Chicago, who graduated at Loyola University School of Medicine in 1932, died in St. Luke's Hospital, February 3, aged 41.

CLIFFORD S. GOODMAN, Chicago, who graduated at University of Louisville, Louisville, Kentucky, in 1912, was suffocated in his apartment by a fire on January 12, aged 56.

GEORGE W. HAAN, Aurora, who graduated at Illinois Medical College in 1900, died February 9, aged 83. He was health commissioner of Aurora from 1919 to 1937.

WALTER B. HUEY, retired, Joliet, who graduated at Rush Medical College in 1903, died January 25, aged 69. He had practiced in Joliet since 1912 and retired in 1944.

WILLIAM JAMES LARKIN, Chicago, who graduated at Rush Medical College in 1922, died in Galesburg, Illinois, Nov. 24, 1947, aged 65, of coronary sclerosis.

PHILIP MAX LE BEAU, Chicago, who graduated at College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois in 1910, died Nov. 9, 1947, aged 62, of coronary heart disease.

ALBERT H. MONTGOMERY, Chicago, who graduated at Rush Medical College in 1907, died suddenly in his home, January 31, aged 65. He served as head of the surgical staff of the Children's Memorial Hospital and also on the staffs of the Presbyterian and Cook County Hospitals.

WILLIAM MAJOR, Peoria, who graduated at University of Illinois College of Medicine in 1901, died Dec. 24, 1947, aged 74. Was a former president of the Peoria County Medical Society.

WILLIS O. NANCE, retired, Chicago, who graduated at Bellevue Hospital Medical College, New York, in 1893, died in St. Vincent's Hospital, Los Angeles, California, January 16, aged 76. He was a member of the "Fifty Year Club" of the Illinois State Medical Society.

MATEN FLOYD RATHBUN, Hanover, formerly of Chicago, who graduated at Chicago Medical School in 1921, died January 25, aged 53.

LAWRENCE W. ROWELL, Western Springs, who graduated at Rush Medical College in 1900, died January 12, aged 77.

ALONZO HIGBEE WATERMAN, Chicago, who graduated at the Hahnemann Medical College and Hospital, Chicago, 1906, died Nov. 26, 1947, aged 67, of coronary thrombosis. He had been certified by the American Board of Internal Medicine, and served on the staff of Henrotin and Illinois Masonic Hospitals.

LOUIS GILBERT WEHRLE, Chicago, who graduated at the Bennett College of Eclectic Medicine and Surgery, Chicago, in 1913, died following injuries received in a fall when he slipped on the pavement, January 13, aged 65.

ARTHUR HENRY WEIS, Chicago, who graduated at Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, in 1901, died in Mount Sinai Hospital Nov. 10, 1947, aged 74, of virus pneumonia. He had served on the staff of the Columbus Memorial Hospital and was health editor of the Abendpost.

STREPTOMYCIN AND SULFADIAZINE USED TOGETHER IN BRUCELLOSIS

Patient Ill For Months Recovers Promptly When Two Combined In Treatment; Neither Effective Alone

How combined treatment with streptomycin and sulfadiazine brought about complete recovery in an unusually stubborn case of human brucellosis is reported in the December 20 issue of *The Journal of the American Medical Association* by C. Wesley Eisele, M.D., and Norman B. McCullough, M.D., from the Department of Medicine, School of Medicine, University of Chicago.

The case suggests that an effective treatment for this baffling disease, which in the United States is exceeded in importance by only three other communicable diseases—tuberculosis, syphilis and gonorrhea—may at last have been found.

Brucellosis is transmitted to humans by contact with diseased hogs, goats or cows, or by drinking the milk of infected animals. In its acute form the symptoms may easily be confused with those of typhoid fever, acute tuberculosis, malaria, acute rheumatic fever, influenza and other diseases; in its chronic form, which is much more common, the disease is even harder to diagnose. Relapse and recurrence of symptoms even after apparent recovery are common. In the early days of the sulfonamide compounds and of streptomycin, enthusiasm for their efficacy in treatment ran high, but neither drug by itself proved particularly effective against the bacteria of brucellosis except in the test tube.

In the case cited by the writers, an acutely ill patient was hospitalized five months after he had begun to have daily attacks of chills, fever and dizziness. A diagnosis of undulant fever was made, and he was given penicillin and blood transfusions. He improved enough to leave the hospital after 10 weeks, but shortly afterward he was admitted to another hospital with a high fever and other symptoms. In spite of prolonged streptomycin treatment his blood tests remained positive for the bacteria of brucellosis, and after three months there was no improvement.

Finally a 28-day course of sulfadiazine treatment was started. The patient still showed no improvement until streptomycin was combined with the sulfadiazine during the last 10 days. After termination of this combined treatment blood tests for the bacteria of brucellosis were negative for the first time, and the patient's fever dropped and remained around normal. He recovered completely, and after 17 months had had no relapse.

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